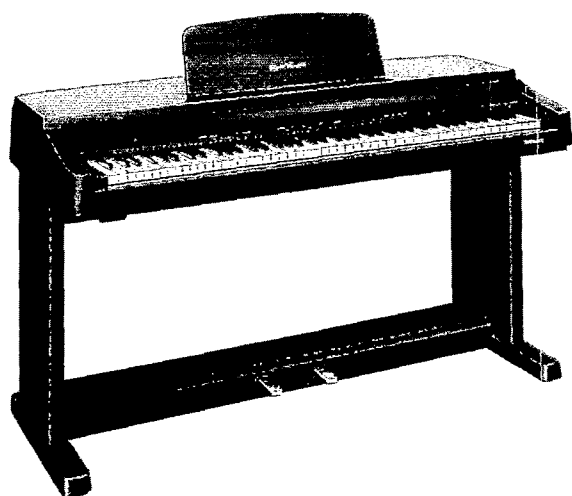


# Service Manual

PCM Digital Ensemble

## SX-PR303

(M), (MC), (XM), (EN), (EH), (EF), (EZ), (EW), (EA),  
(EP), (EK), (XL), (XR), (XS), (XD), (X), (XT)

### AREAS

|                                           |                                                                                |
|-------------------------------------------|--------------------------------------------------------------------------------|
| (M): U.S.A.                               | (EK): the United Kingdom                                                       |
| (MC): Canada                              | (XL): New Zealand                                                              |
| (XM): Mexico                              | (XR): Australia                                                                |
| (EN): Norway, Sweden,<br>Denmark, Finland | (XS): Malaysia, Singapore,<br>South Africa                                     |
| (EH): Holland, Belgium                    | (XD): Saudi Arabia, Kuwait                                                     |
| (EF): France, Italy                       | (X): the Middle East,<br>Indonesia, Hong<br>Kong, the Philippines,<br>Thailand |
| (EZ): Germany                             | (XT): Taiwan                                                                   |
| (EW): Switzerland                         |                                                                                |
| (EA): Austria                             |                                                                                |
| (EP): Spain, Portugal, Greece             |                                                                                |

### Specifications

|                                                 |                           |                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEYBOARD                                        |                           | 88 KEYS                                                                                                                                                                                                                                                                                    |
| SOUND GENERATOR                                 |                           | PCM                                                                                                                                                                                                                                                                                        |
| MAXIMUM NUMBER OF NOTES PRODUCED SIMULTANEOUSLY |                           | 32 NOTES                                                                                                                                                                                                                                                                                   |
| SOUNDS                                          | PIANO(4 SOUNDS)           | GRAND PIANO, UPRIGHT PIANO, ELECTRIC PIANO, MODERN PIANO                                                                                                                                                                                                                                   |
|                                                 | SOUND SELECT (161 SOUNDS) | GROUP: PIANO, E PIANO, AC GUITAR, E GUITAR, BRASS, TRUMPET, BASS, KEYBOARD PERC, HARPSI/MALLET, SPECIAL PERC, STRINGS/VOCAL, ORG/ACCORDION, FLUTE/REED, SAX, SYNTH, OTHERS                                                                                                                 |
| KEY SPLIT                                       |                           | <input type="radio"/> (G2, C3, C4)                                                                                                                                                                                                                                                         |
| PEDAL                                           |                           | SUSTAIN, SOFT                                                                                                                                                                                                                                                                              |
| DIGITAL EFFECT                                  |                           | <input type="radio"/>                                                                                                                                                                                                                                                                      |
| DIGITAL REVERB                                  |                           | <input type="radio"/>                                                                                                                                                                                                                                                                      |
| TRANPOSE                                        |                           | <input type="radio"/> (G-C-F#)                                                                                                                                                                                                                                                             |
| RHYTHM SELECT (70 RHYTHMS)                      |                           | GROUP: 8 BEAT, 16 BEAT, SWING, JAZZ COMBO, ROCK/DISCO, ROCK(OTHERS), COUNTRY/R&B, MARCH/POLKA, LATIN 1, SHOW TIME, TRAD, WALTZ, LATIN 2, OTHERS                                                                                                                                            |
| CONTROL                                         |                           | MAIN VOLUME, BALANCE, START/STOP, SYNCHRO START, FILL IN 1, FILL IN 2, INTRO & ENDING, TRANPOSE/PROGRAM                                                                                                                                                                                    |
| METRONOME                                       |                           | <input type="radio"/>                                                                                                                                                                                                                                                                      |
| ONE TOUCH PLAY                                  |                           | <input type="radio"/>                                                                                                                                                                                                                                                                      |
| AUTO PLAY CHORD                                 |                           | BASIC, ADVANCED, PIANIST, ACCOMP PART 1, 2, 3                                                                                                                                                                                                                                              |
| PANEL MEMORY                                    |                           | SET, 1-3                                                                                                                                                                                                                                                                                   |
| SEQUENCER                                       |                           | 16 TRACKS STORAGE CAPACITY : APPROX 19000 NOTES<br>INPUT MODES : REAL TIME, STEP (CHORD, RHYTHM ONLY)<br>FUNCTIONS : TRACK ASSIGN, TRACK CLEAR, SONG CLEAR, MEDLEY                                                                                                                         |
| COMPOSER                                        |                           | STORAGE CAPACITY : APPROX 8600 NOTES, 5 PARTS (BASS, ACCOMP 1, 2, 3, DRUMS),MEMORY : 2BANK ×6<br>FUNCTIONS : MODE SELECT                                                                                                                                                                   |
| DISPLAY                                         |                           | LED (3 DIGITS)                                                                                                                                                                                                                                                                             |
| DEMO                                            |                           | <input type="radio"/>                                                                                                                                                                                                                                                                      |
| DISK DRIVE                                      |                           | DISK LOAD, DISK SAVE, MIDI FILE LOAD, MIDI FILE SAVE, DISK FORMAT                                                                                                                                                                                                                          |
| SOUND                                           |                           | SOUND SELECT, KEY SHIFT, PITCH BEND RANGE, BALANCE, TECHNI-CHORD TYPE, REVERB SET, ADVANCED TYPE                                                                                                                                                                                           |
| TUNE & TOUCH                                    |                           | MASTER TUNING, PIANO TUNING, TOUCH SENSE, MINIMUM RANGE                                                                                                                                                                                                                                    |
| MEMORY & CONTROL                                |                           | INITIAL, PEDAL SETTING                                                                                                                                                                                                                                                                     |
| MIDI                                            |                           | MIDI PRESETS, BASIC CHANNEL, OCTAVE SHIFT, GENERAL MIDI, LOCAL CONTROL, REALTIME COMMAND, CLOCK, NOTE ONLY, TRANPOSE OUT, PROGRAM CHANGE MODE, SONG SELECT, MIDI SET UP LOAD, PROGRAM CHANGE TO PANEL MEMORY, RIGHT INPUT, APC INPUT, TECHNI-CHORD OUTPUT, DRUM PATTERN OUTPUT, APC OUTPUT |

# Technics

|                        |                                                                      |
|------------------------|----------------------------------------------------------------------|
| EXTERNAL MEMORY        | DISK DRIVE (FOR 2HD, 2DD)                                            |
| TERMINALS              | HEADPHONE TERMINALS × 2, LINE OUT, AUX IN, MIDI (IN, OUT)            |
| OUTPUT                 | 25 W × 2                                                             |
| SPEAKERS               | 16cm × 2, 6.5cm × 2                                                  |
| POWER REQUIREMENT      | 150 W, 95 W (NORTH AMERICA AND MEXICO)                               |
|                        | AC 120/220/240 V 50/60 Hz                                            |
|                        | AC 120 V 60Hz (NORTH AMERICA AND MEXICO)                             |
|                        | AC 230 V 50/60 Hz (NEW ZEALAND AND EUROPE EXCEPT FOR UNITED KINGDOM) |
| DIMENSIONS (W × H × D) | 142.4 cm × 101.6 cm × 59.0 cm (56-1/16" × 40" × 23-7/32")            |
| NET WEIGHT             | 53 kg (116.8 lbs.)                                                   |
| ACCESSORIES            | STAND, AC CORD                                                       |

\*Specification are subject to change without notice for further improvement.

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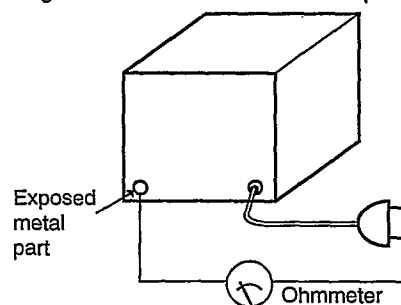
## SAFETY PRECAUTION (This "safety precaution" is for the U.S.A. only)

#### ● Safety Precaution

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only the manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc. .
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

#### ● Insulation Resistance Test

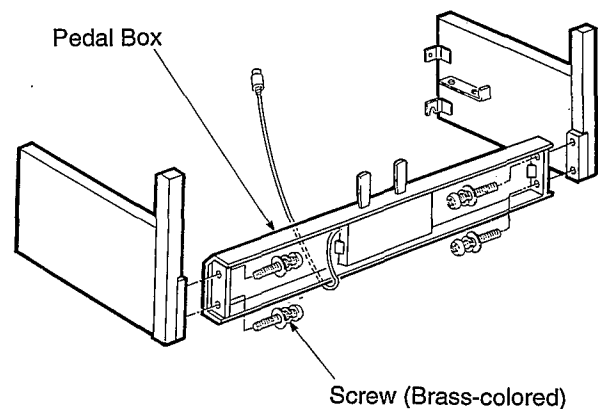
1. Unplug the power cord and short the prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc. . Measurements should range from 4 MΩ to infinity for all exposed parts.



Resistance = 4MΩ to ∞

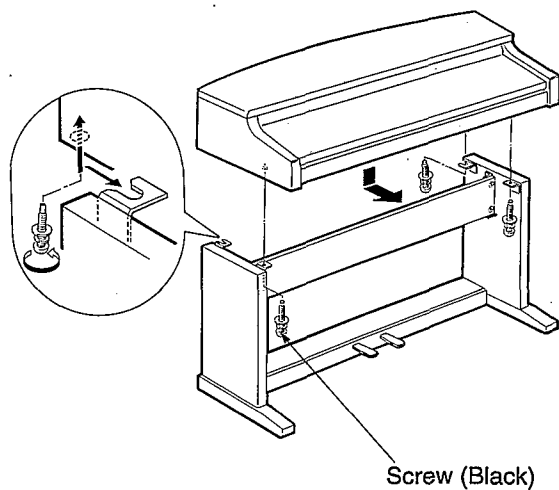
HOW TO ASSEMBLE THE PIANO

- 1 Assemble the side panels and the pedal box with the 4 brass-colored screws.



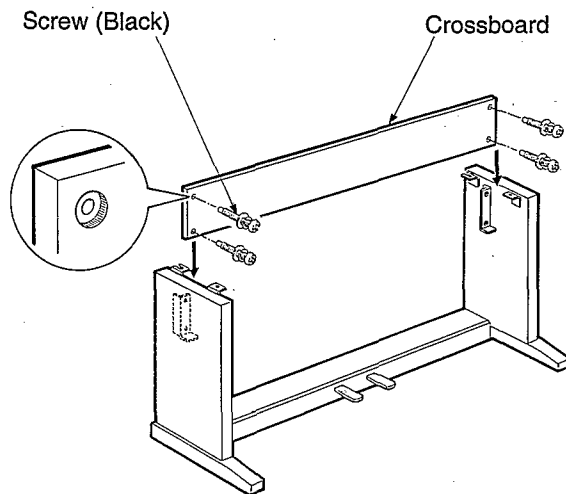
[Fig. 1]

- 3 Place the piano unit on the stand and secure it to the stand.



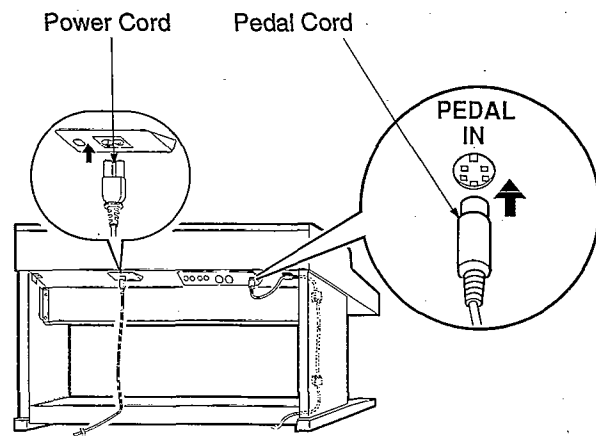
[Fig. 3]

- 2 Place the stand upright. Secure the crossboard to the front of the L-shaped brackets with 4 screws.



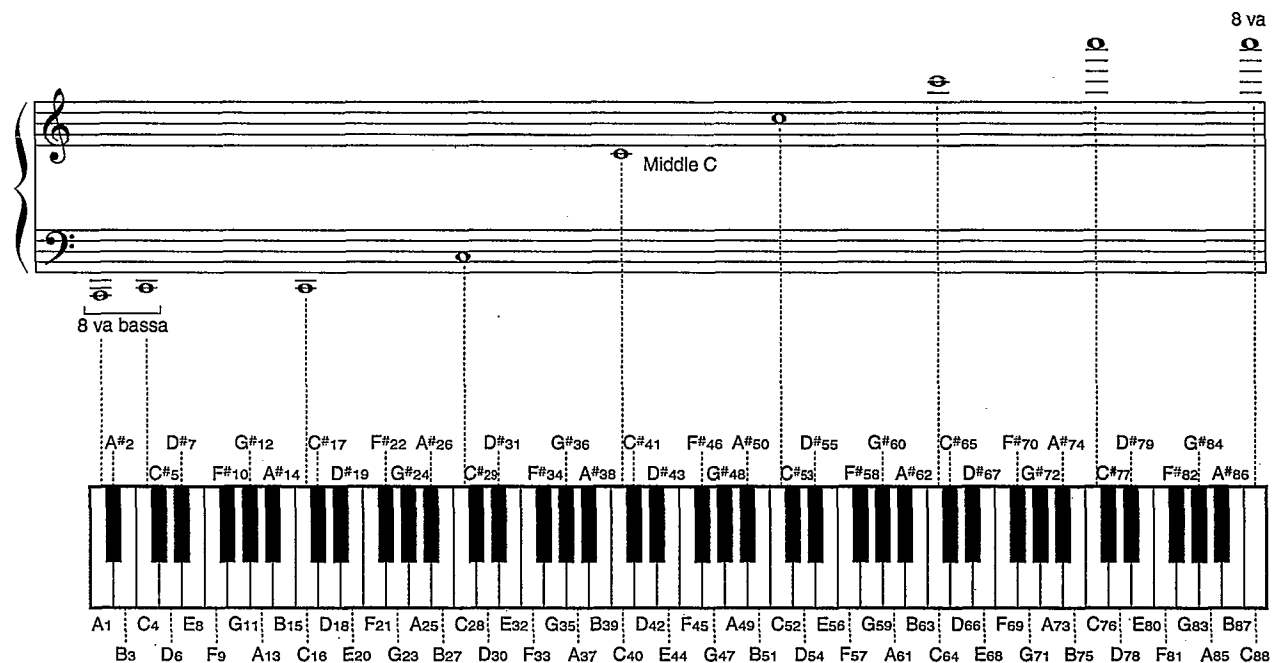
[Fig. 2]

- 4 Connect the pedal cord and power cord to their sockets located rear of the piano unit as shown below.

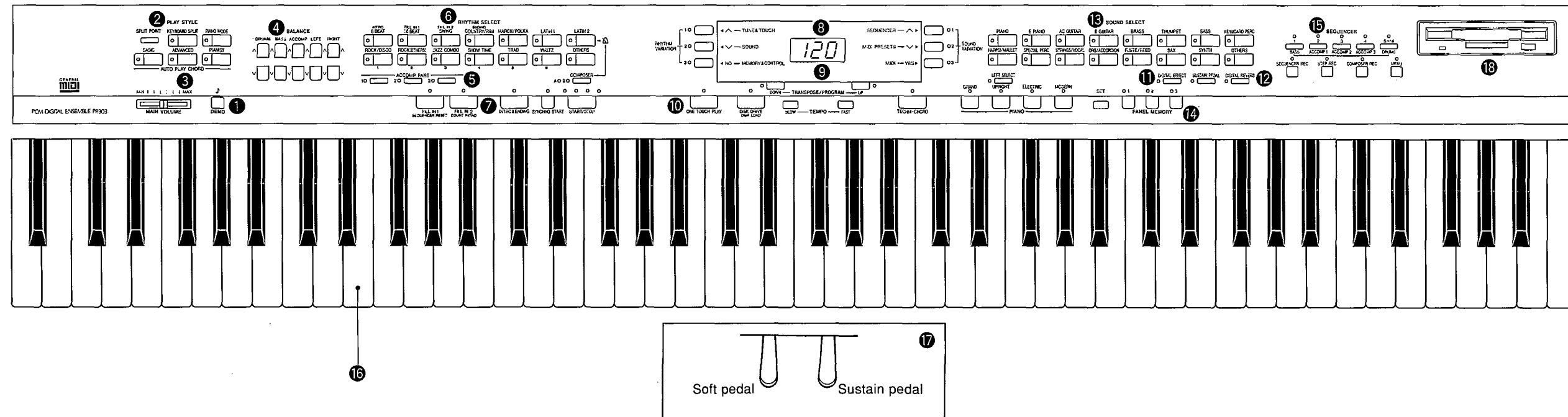


[Fig. 4]

KEYBOARD RANGES



## ARRANGEMENT OF CONTROL PANEL



## BASIC FUNCTIONS

## 1 DEMO

Listen to programmed demonstration tunes which impart the charm of individual sounds and rhythm patterns.

## 2 PLAY STYLE

When playing as a piano, select either a conventional keyboard or a split keyboard. The location of the split point can be set at G2, C3 or G3 with the **SPLIT POINT** button.

### ③ AUTO PLAY CHORD

When you play a chord on the keyboard, an accompaniment pattern which matches the selected rhythm is automatically produced. Select from three modes, according to your level of expertise.

#### 4 BALANCE

The volumes for the **DRUMS**, **BASS**, **ACCOMP**, **LEFT** and **RIGHT** parts are adjusted with their respective **BALANCE** controls.

## ⑤ ACCOMP PART

The **AUTO PLAY CHORD** automatic accompaniment is comprised of three **ACCOMP** parts—1, 2 and 3—which you can turn on and off individually.

## 6 RHYTHM SELECT

Various automatic rhythm patterns are stored in the permanent memory.

## 7 Rhythm control

The **FILL IN 1, 2** button are used to insert a fill-in pattern during the rhythm performance. Use the **INTRO & ENDING** button to start a song with an intro pattern or finish with an ending pattern. **START/STOP** is used to start and stop the rhythm instantly. Or turn on the **SYNCHRO START** button to start the rhythm by pressing a key on the left side of the keyboard. Regulate the speed of the automatic rhythm with the **TEMPO** buttons.

## 8 DISPLAY

During the normal performance mode, tempo is displayed. When setting the functions for the **SEQUENCER**, **COMPOSER**, MIDI and others, the relevant information is displayed.

## 9 TRANSPOSE

C is the standard setting, but you can raise or lower the key of the entire keyboard in semi-tone steps across an entire octave.

## ⑩ ONE TOUCH PLAY

This special feature allows you to easily set all the panel settings, including sounds and effects, in just seconds.

## 11 Effects

**DIGITAL EFFECT** gives the sound greater depth and breadth. **SUSTAIN PEDAL** enables or disables operation of the sustain pedal.

## 12 DIGITAL REVERB

Turn the **DIGITAL REVERB** button on to add reverberation to the sound.

### 13 SOUND SELECT

You can select from 4 different piano sounds. And various sounds are available for each button.

## 14 PANEL MEMORY

Set the desired sounds, effects, split point, volume settings, rhythm, tempo, etc. with the panel controls. Then store the panel settings in one of the programmable memories. Then while you play, the touch of one button recalls the panel settings instantly.

## 15 SEQUENCER

Record and playback your performance.

## 16 Keyboard

This keyboard features Touch Response, by which you control the volume by playing the keys harder or softer.

## 17 Pedals

The sustain pedal and soft pedal works as a damper.

## 18 Disk Drive

**9 DISK DRIVE**  
The Disk Drive allows you to store up to 20 performances on a memory disk.

## Initialization

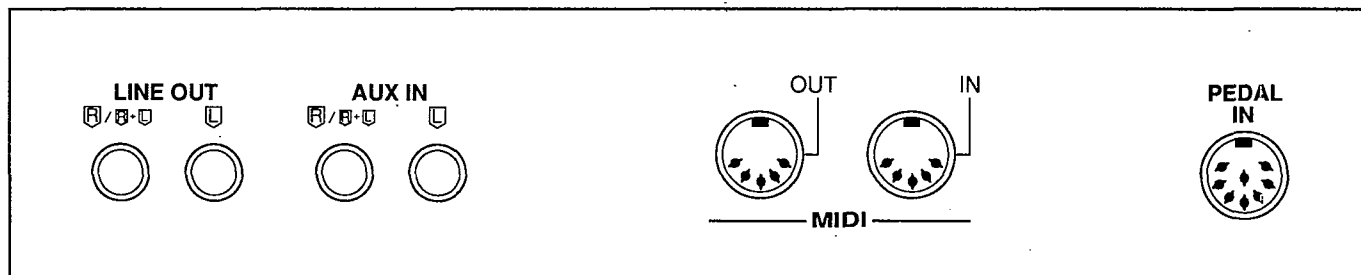
The following procedure resets all programmable settings, functions and memories to their initialized (factory-preset) status. Use this procedure if the buttons, key, etc. malfunction, or when you wish to reset the memories and functions.

<Procedure>

1. Turn off the **POWER** button.
2. While pressing the three lower leftmost buttons in the **RHYTHM SELECT** section at the same time, turn the **POWER** button on again.

# TERMINALS

(on the rear panel)



## LINE OUT (output level 1.0 Vrms, 600 $\Omega$ )

By plugging into a high-power amplifier, the sound can be reproduced at a high volume. (Use the **R/R+L** terminal when outputting monaural sound.)

## AUX IN (input level 500 mVrms, 6 k $\Omega$ )

Other instruments such as a rhythm machine or sound module can be connected to the piano so that the sound is output from the piano. To receive monaural sound, connect instruments to the **R/R+L** terminal.

## MIDI (Musical Instrument Digital Interface)

MIDI is the standard specification that enables connection to equipment such as synthesizers and personal computers.

**IN :** The terminal that receives data from external equipment.

**OUT :** The terminal that transmits data from this instrument to external equipment.

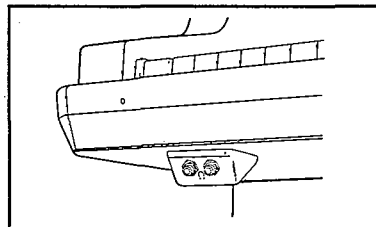
- Use a 5-pin DIN cord (less than 15 m long) for these connections.

## PEDAL IN

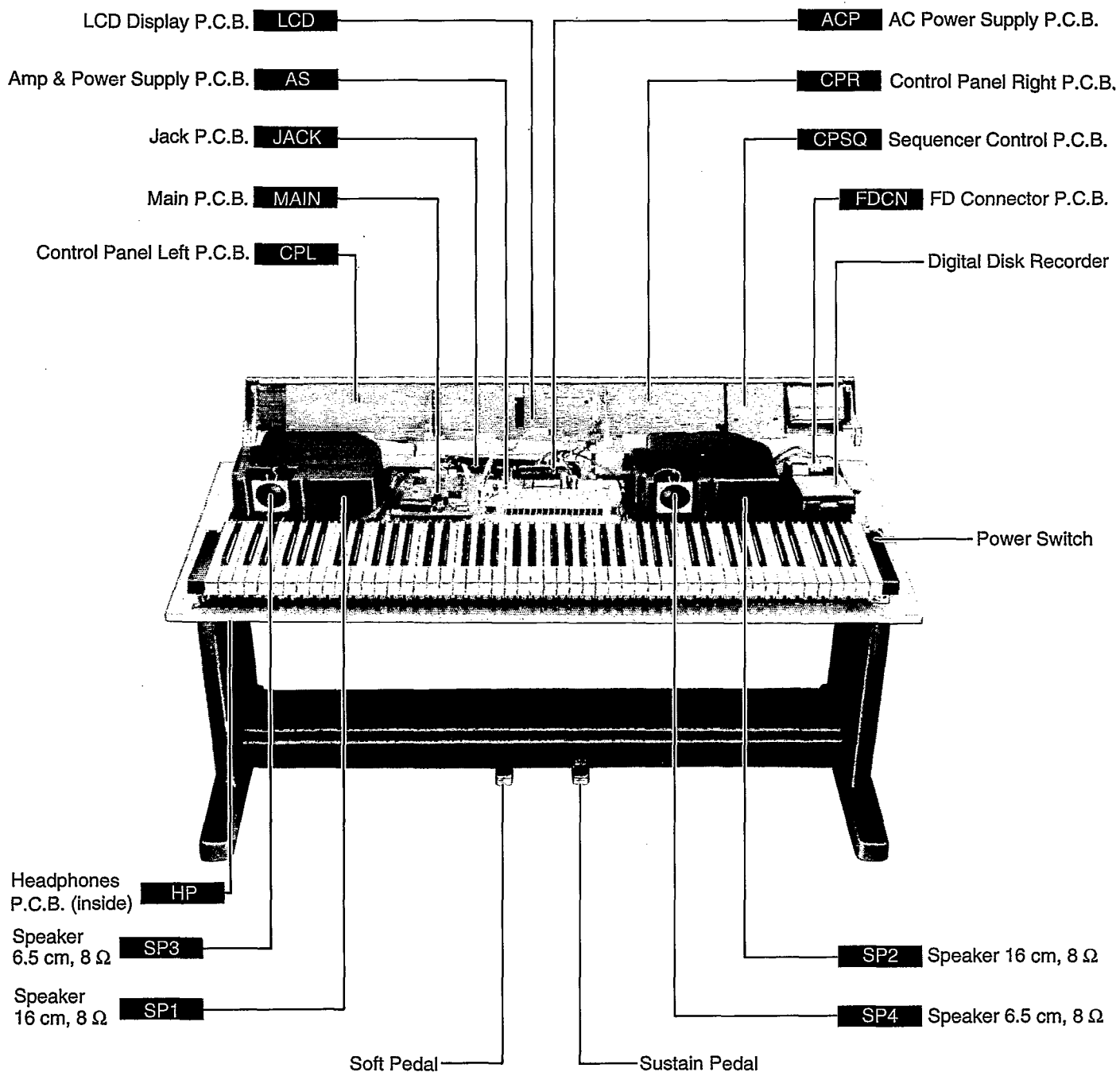
Connect the included pedal.

## PHONES ( $\Omega$ ) $\times 2$

For silent practice, headphones may be used. When plugged in, the speaker system is automatically switched off, and sound is heard only through the headphones.



# PARTS LOCATION

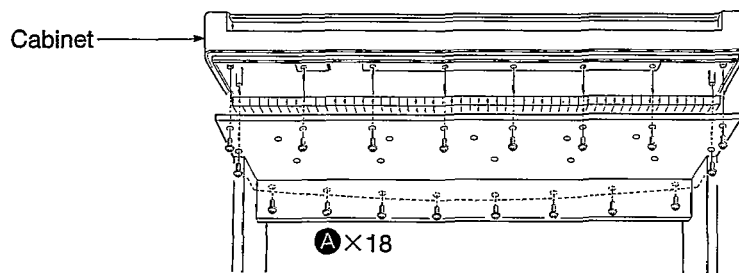


[Photo-1]

# DISASSEMBLY INSTRUCTIONS

## 1 Removing the cabinet

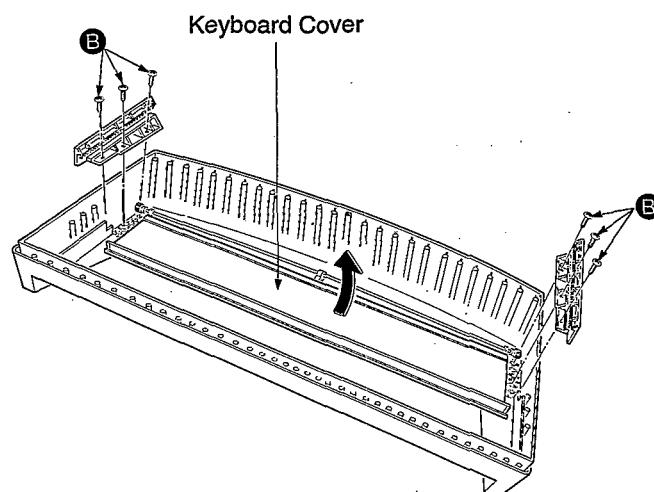
1. Remove the screws from the underside of the cabinet (A 18 pcs.).
2. To remove the cabinet as shown in Fig. 5.



[Fig.5]

## 2 Removing the keyboard cover

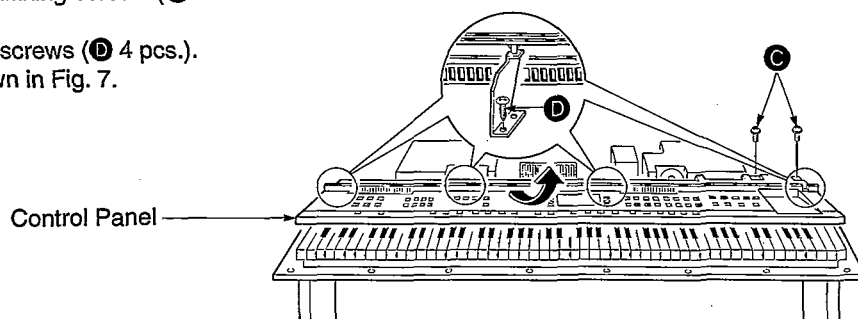
1. Remove the cabinet (see Step 1).
2. Remove the guide rail holding screws (B 6 pcs.).
3. Remove the guide rails.
4. Remove the keyboard cover as shown in Fig. 6.



[Fig.6]

## 3 Removing the control panel

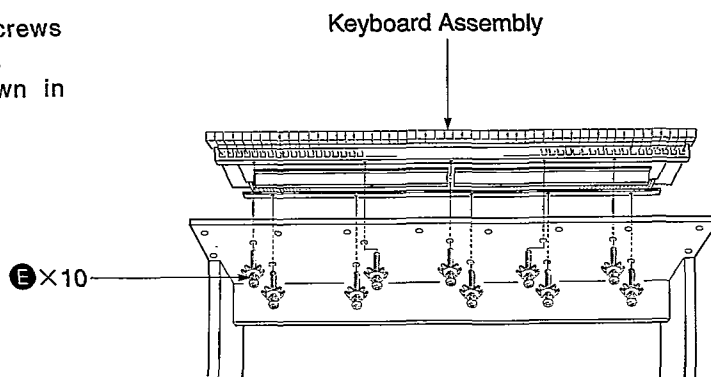
1. Remove the cabinet (see Step 1).
2. Remove the digital disk recorder affixing screws (C 2 pcs.).
3. Remove the control panel affixing screws (D 4 pcs.).
4. Remove the control panel as shown in Fig. 7.



[Fig.7]

#### 4 Removing the keyboard assembly

1. Remove the control panel (see Step 3).
2. Remove the keyboard assembly affixing screws located on the bottom of the cabinet (E 10 pcs.).
3. Remove the keyboard assembly as shown in Fig. 8.



[Fig.8]

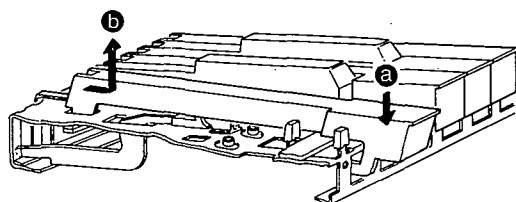
#### 5 Keys (s)

##### Disassembly

1. Remove the keyboard assembly (see Step 4).
2. To release the key claw.
  - a Press the front of the key downward slightly.
  - b Press the rear of the key forward gently.
3. To remove the key, lift as shown in Fig. 9.

##### NOTE:

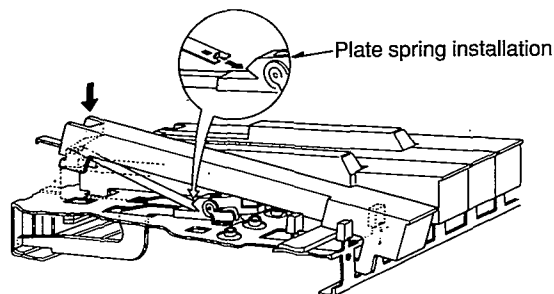
- The key claw is easily broken. Do not apply undue force. Should a key claw break, it can still be used; however, a replacement is recommended.
- If a black key is to be replaced it is necessary to remove both adjacent white keys.



[Fig.9]

##### Assembly

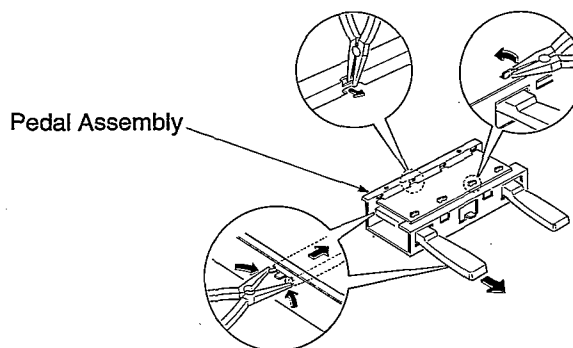
1. Insert the front part of the key into the chassis.
2. Insert the plate spring into the hammer notch as shown in Fig. 10.
3. While slowly lowering the key into the chassis, insert the plate spring into the notch at the rear of the key.
4. Carefully insert the key into the opening in the chassis and slide the key towards the rear to lock it in place.



[Fig.10]

#### 6 Disassembly of the pedal assembly

1. Remove the pedal assembly from the pedal box.
2. Disassemble the pedal assembly as shown in Fig. 11.



[Fig.11]

## 7 Removing the printed circuit boards

• Remove the cabinet (see Step 1).

### MAIN P.C.B.

1. Remove the MAIN P.C.B. mounting screws (F 2 pcs.).
2. Release the claws of the P.C.B. holders.

### AS P.C.B.

1. Remove the AS P.C.B. mounting screws (G 2 pcs.).
2. Remove the claws of the P.C.B. holder.

### JACK P.C.B.

1. Remove the MAIN P.C.B..
2. Remove the JACK P.C.B. mounting screws (H 3 pcs.).
3. Remove the ground wire holding screws (I 2 pcs.).

### HP P.C.B.

1. Remove the keyboard assembly (See Step 4).
2. Remove the headphone jack mounting nuts (J 2 pcs.).
3. Remove the ground wire holding screw (K 1 pc.).

### ACP P.C.B.

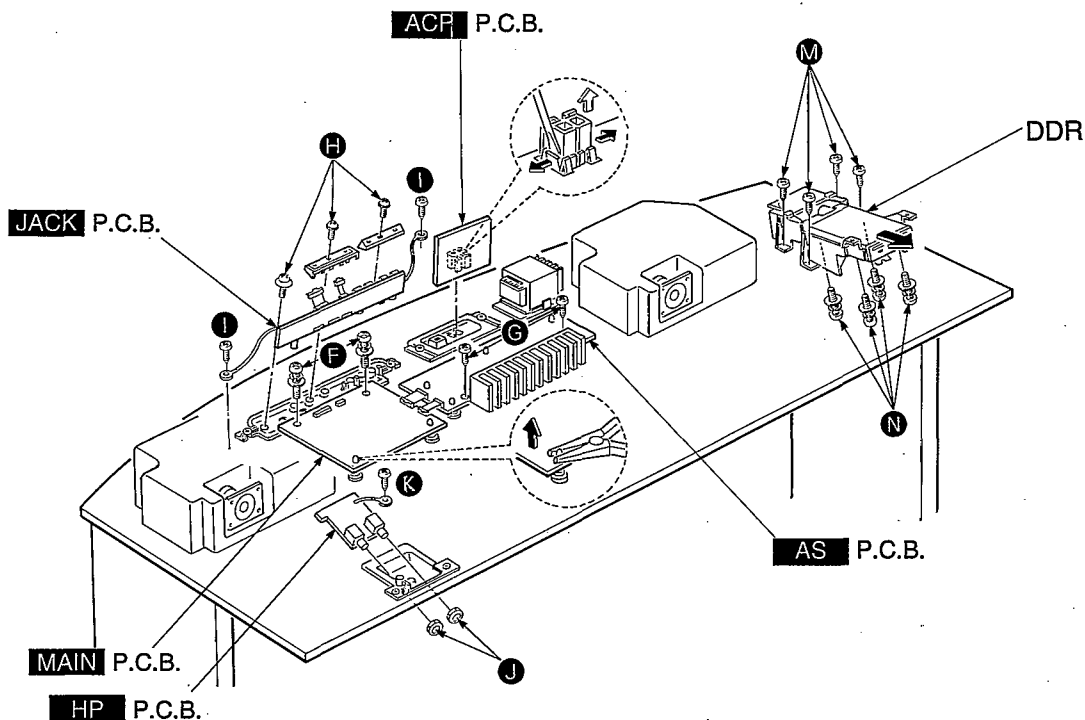
- Release the claws of the AC IN connector bracket.

### LCD P.C.B. (Fig. 13)

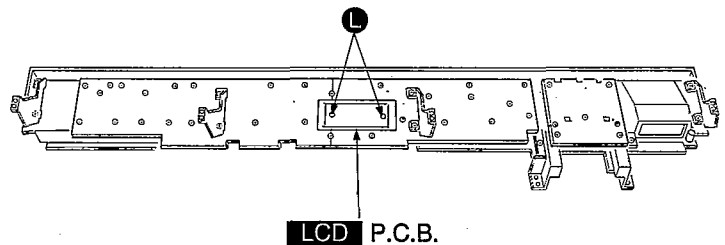
1. Remove the control panel (See Step 3).
2. Remove the LCD P.C.B. mounting screws (L 2 pcs.).

## 8 Removing the digital disk recorder (DDR)

1. Remove the control panel (see Step 3).
2. Remove the chassis on which DDR is attached and then remove (M 4 pcs. and N 4 pcs.).
3. Pull out the DDR from the connector.



[Fig.12]



[Fig.13]

# SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLES

The following changes in performance may occur in Technics Digital Ensemble but do not indicate trouble.

|                    |  | Phenomenon                                                                                                                         | Remedy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|--|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sounds and effects |  | The buttons, keys, etc. malfunction.                                                                                               | <ul style="list-style-type: none"> <li>• Turn off the <b>POWER</b> button once, then turn it on again. If this procedure is not successful, turn off the <b>POWER</b> button once. Then, while pressing the three lower left buttons in the <b>RHYTHM SELECT</b> section (<b>ROCK/DISCO</b>, <b>ROCK [OTHERS]</b> and <b>JAZZ COMBO</b>) at the same time, turn the <b>POWER</b> button on again. (Note that, in this case, all programmable settings, functions and memories return to their factory-preset status.)</li> </ul>                                                                             |
|                    |  | No sound is produced when the keys are pressed.                                                                                    | <ul style="list-style-type: none"> <li>• The <b>MAIN VOLUME</b> is at the minimum setting. Adjust the volume with the <b>MAIN VOLUME</b> control.</li> <li>• The volumes for the selected parts are set to the minimum levels. Use the <b>BALANCE</b> buttons to set the volumes of the relevant parts to appropriate levels.</li> <li>• The <b>LOCAL CONTROL</b> for a part performed on the keyboard is set to <b>OFF</b>. Set the <b>LOCAL CONTROL</b> to <b>ON</b>.</li> </ul>                                                                                                                           |
|                    |  | The volume is very low when the keyboard is played.                                                                                | <ul style="list-style-type: none"> <li>• The volume setting in the <b>SEQUENCER</b> contents is very low. Follow the <b>INITIAL</b> procedure to reset the settings.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                    |  | Only percussion instrument sounds are produced when the keyboard is played.                                                        | <ul style="list-style-type: none"> <li>• In the <b>SOUND SELECT</b> section, the <b>KEYBOARD PERC</b> button is on.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                    |  | Some sounds cannot be selected.                                                                                                    | <ul style="list-style-type: none"> <li>• When the <b>GENERAL MIDI</b> status is set to on, the sounds which can be selected and operations which can be executed are limited. Turn the <b>GENERAL MIDI</b> status off to return the instrument to its normal operation.</li> </ul>                                                                                                                                                                                                                                                                                                                           |
|                    |  | The sound you hear is different from the sound you selected.                                                                       | <ul style="list-style-type: none"> <li>• This sometimes occurs when you play back <b>SEQUENCER</b> or <b>COMPOSER</b> data which was created on a different PR Series model, or when <b>MIDI</b> data is received from a connected instrument. Select the desired sounds again.</li> </ul>                                                                                                                                                                                                                                                                                                                   |
|                    |  | The sustain does not work even when the sustain pedal is depressed.                                                                | <ul style="list-style-type: none"> <li>• The sustain pedal is not connected. Connect the pedal cord firmly to the <b>PEDAL IN</b> terminal on the back of the instrument.</li> <li>• When the <b>SUSTAIN PEDAL</b> button is off, the sustain does not work even when the pedal is depressed. Turn on the <b>SUSTAIN PEDAL</b> button.</li> </ul>                                                                                                                                                                                                                                                            |
|                    |  | The soft pedal does not operate properly. For example, when the soft pedal is depressed, the rhythm starts or a fill-in is played. | <ul style="list-style-type: none"> <li>• Different functions can be programmed in the soft pedal. You can return the pedal to its original function by turning off the instrument once, or by using the <b>PEDAL SETTING</b> mode.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                |
| Rhythm             |  | The rhythm does not start.                                                                                                         | <ul style="list-style-type: none"> <li>• The <b>DRUMS</b> volume is set to the minimum level. Use the <b>BALANCE</b> buttons to set the <b>DRUMS</b> volume to an appropriate level.</li> <li>• In the <b>RHYTHM SELECT</b> section, a <b>COMPOSER</b> rhythm in bank <b>A</b> or bank <b>B</b> with no stored pattern was selected. Select a different rhythm.</li> <li>• A <b>SEQUENCER</b> track button is on. When you are not playing back the <b>SEQUENCER</b> performance, turn off the track buttons.</li> <li>• <b>CLOCK</b> is set to <b>MIDI</b>. Set <b>CLOCK</b> to <b>INTERNAL</b>.</li> </ul> |
|                    |  | Some sounds cannot be selected.                                                                                                    | <ul style="list-style-type: none"> <li>• When the <b>GENERAL MIDI</b> status is set to on, the sounds which can be selected and operations which can be executed are limited. Turn the <b>GENERAL MIDI</b> status off to return the instrument to its normal operation.</li> </ul>                                                                                                                                                                                                                                                                                                                           |

| Phenomenon      |                                                                                                      | Remedy                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AUTO PLAY CHORD | No sound is produced for the automatic accompaniment.                                                | <ul style="list-style-type: none"> <li>In the <b>RHYTHM SELECT</b> section, a <b>COMPOSER</b> rhythm in bank <b>A</b> or bank <b>B</b> with no stored pattern was selected. Select a different rhythm.</li> </ul>                                                                                                                                                                                                   |
|                 | No sound is produced for the automatic accompaniment, or only the sounds of some parts are produced. | <ul style="list-style-type: none"> <li>Some or all of the <b>ACCOMP 1, 2, and 3</b> buttons are turned off. Press the buttons to turn them on.</li> <li>The <b>ACCOMP</b> volumes are set to the minimum level. Use the <b>BALANCE</b> buttons to set the volumes to appropriate levels.</li> </ul>                                                                                                                 |
| SEQUENCER       | Storage is not possible.                                                                             | <ul style="list-style-type: none"> <li>The remaining memory capacity of the <b>SEQUENCER</b> is 0. Follow the SONG CLEAR or TRACK CLEAR procedure to erase the memory.</li> </ul>                                                                                                                                                                                                                                   |
|                 | Multi-track storage is not possible.                                                                 | <ul style="list-style-type: none"> <li>The playback track has been selected, but the <b>START/STOP</b> button has not been pressed. A flashing track indicator shows the track which is ready for recording, and a lit track indicator shows a track which is ready for playback. To record one track while listening to another (playback) track, press the <b>START/STOP</b> button to begin playback.</li> </ul> |
| COMPOSER        | Storage is not possible.                                                                             | <ul style="list-style-type: none"> <li>The remaining memory capacity of the <b>COMPOSER</b> is 0.</li> </ul>                                                                                                                                                                                                                                                                                                        |
|                 | Setting the time signature and number of measures is not possible.                                   | <ul style="list-style-type: none"> <li>The time signature and number of measures cannot be changed for a pattern which is currently recorded in the <b>COMPOSER</b>. If you wish to change the time signature and/or measure data, first follow the procedure to clear the memory.</li> </ul>                                                                                                                       |
|                 | The playback timing of the rhythm pattern is different from the timing with which it was recorded.   | <ul style="list-style-type: none"> <li>The <b>QUANTIZE</b> function was on when the pattern was recorded and the timing was automatically corrected. Set the quantize level to a smaller note unit or to OFF when recording.</li> </ul>                                                                                                                                                                             |
| Disk Drive      | The Disk Drive produces a noise during recording or playback.                                        | <ul style="list-style-type: none"> <li>This occurs when the Disk Drive is reading a disk. It does not indicate a problem.</li> </ul>                                                                                                                                                                                                                                                                                |
|                 | When the procedure to load from a disk is performed, the contents of the piano memory are erased.    | <ul style="list-style-type: none"> <li>When performing the load operation from a disk, the piano memory changes to that of the data loaded from the disk. If you wish to preserve a song which is stored in the piano memory, save it on a disk before performing the load procedure.</li> </ul>                                                                                                                    |
| Other           | Noise from a radio or TV can be heard.                                                               | <ul style="list-style-type: none"> <li>This sometimes occurs when electrical equipment such as a radio or TV is used near the instrument. Try moving such electrical equipment further away from the instrument.</li> <li>The sound may be coming from a nearby broadcast station or amateur radio station. If the sound is bothersome, consult your dealer or service center.</li> </ul>                           |
|                 | The cabinet becomes warm during use.                                                                 | <ul style="list-style-type: none"> <li>This instrument has a built-in power source that heats the cabinet to some degree. This is not an indication of trouble.</li> </ul>                                                                                                                                                                                                                                          |

# ERROR DISPLAY

If an error message appears on the display, follow the appropriate steps to remedy the problem.

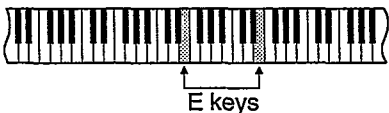
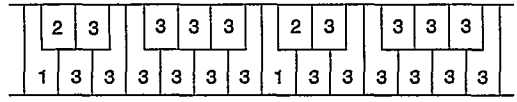
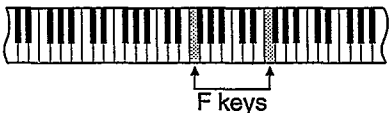
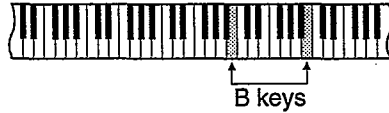
| No. | Contents                                                                                                                               |
|-----|----------------------------------------------------------------------------------------------------------------------------------------|
| 00  | The data on the disk that you are using is for a different product.                                                                    |
| 01  | An error has occurred while the disk was loading.<br>Please try again!                                                                 |
| 02  | There is no disk in the Disk Drive.                                                                                                    |
| 03  | The file that you tried to load is empty.                                                                                              |
| 05  | An error has occurred while the disk was saving.<br>Please try again!                                                                  |
| 06  | The disk that you are using is write protected.<br>Please remove the write protection and try again.                                   |
| FUL | 07; The disk that you are using is full.<br>Please use another disk.                                                                   |
| 08  | An error has occurred while the disk was formatting. The disk that you are using may be faulty.<br>Please try formatting another disk. |
| 10  | The data is already copy protected.                                                                                                    |
| 11  | The password that you entered is incorrect.                                                                                            |
| 20  | A problem has occurred with your <b>SEQUENCER</b> data.<br>This might be due to a damaged or faulty disk.                              |
| FUL | 21; Memory full                                                                                                                        |

| No. | Contents                                                                                                                                                                                                    |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 23  | It is impossible to change the time signature because it has already been set in the existing tracks.                                                                                                       |
| 24  | A RHYTHM track already exists. It is impossible to assign two tracks to RHYTHM.                                                                                                                             |
| 28  | This song is too long to be saved as a MIDI file.                                                                                                                                                           |
| 29  | The MIDI file that you have tried to load exceeds the memory capacity of this PR and cannot be played. The <b>SEQUENCER</b> memory has been cleared.                                                        |
| 30  | It is not possible to change the time signature or measure length of a <b>COMPOSER</b> pattern after it has been recorded. If you want to proceed, you must first clear the entire <b>COMPOSER</b> pattern. |
| FUL | 32; Memory full                                                                                                                                                                                             |
| 45  | This software format is not supported by the PR and cannot be loaded.                                                                                                                                       |
| 50  | There was no data in the <b>SEQUENCER</b> when you attempted to save a Standard MIDI File.                                                                                                                  |
| 52  | MIDI FILE LOAD was used to load data from a disk which is not in the Standard MIDI File format.                                                                                                             |
| 53  | There is no track which can be recorded in the step record mode.                                                                                                                                            |

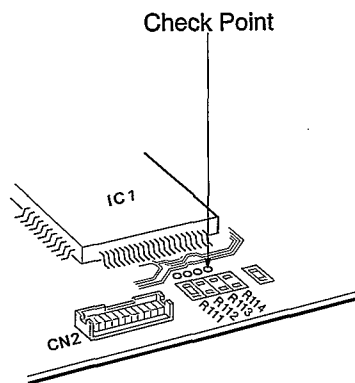
# ABOUT THE SELF-DIAGNOSTIC FUNCTION

This model has some self-diagnostic capabilities. When set to the self-diagnostic mode, operation of various components can be verified by following the procedures in the chart below.

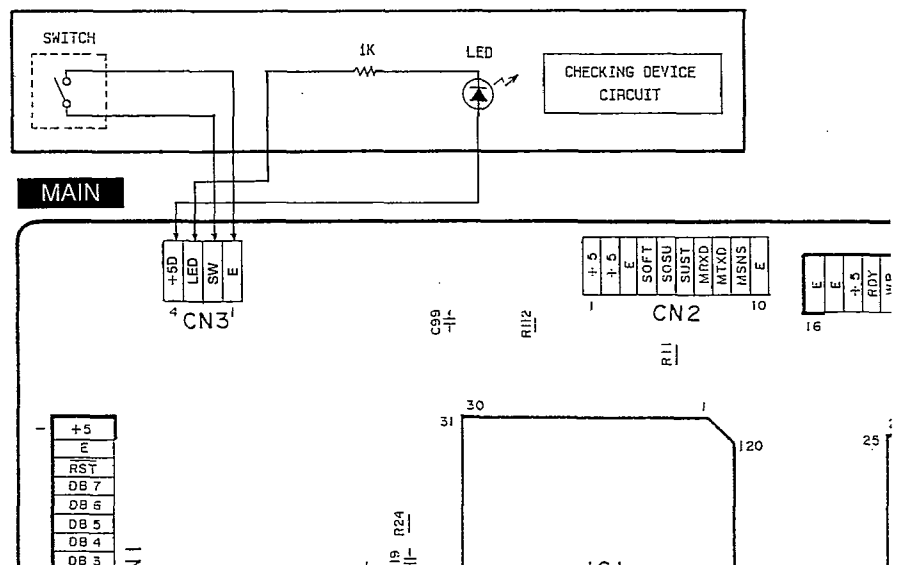
| No. | PCB        | TEST MODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Procedure                                                                                                                                                                                 |
|-----|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | MAIN       | RAM (IC7,10), ROM (IC3,4,5) check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1. Connect the CHECKING DEVICE (refer to page I-15) to CN 3 on the MAIN P.C.B., and turn on the CHECKING DEVICE switch.<br>2. Turn on the power switch.                                   |
|     |            | <p>When the power switch is turned on, the LED of the CHECKING DEVICE flashes 8 times. The first 4 flashes are for the RAM check, and the latter 4 flashes are for the ROM check. The order of the LED flashes corresponds to the respective IC numbers as shown below. If an IC is defective, the corresponding flash time is longer.</p> <p>Examples</p> <p>1. RAM OK, ROM OK</p> <p>2. RAM OK, ROM (IC3) defective</p> <p>3. RAM (IC7) defective, ROM OK</p> <p>NOTE : ● indicates short flash time = OK<br/>           ■ indicates long flash time = Defective</p> |                                                                                                                                                                                           |
| 2   | MAIN       | V53 Gate Array (IC2) check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Press and hold the two C keys shown below, and then turn on the power switch.                                                                                                             |
|     |            | Monitor pins (refer to page I-15) on oscilloscope, and check whether data (see figure) is output.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                           |
| 3   | CPL<br>CPR | Control panel CPU check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1. Connect the CHECKING DEVICE to CN 3 on the MAIN P.C.B. (The Checking Device switch should be off).<br>2. Press and hold the two D keys shown below, and then turn on the power switch. |
|     |            | <p>When the power switch is turned on, the LED of the CHECKING DEVICE flashes 4 times. The order of the LED flashes corresponds to the CPU (IC) on the respective P.C.B.s as shown below. If an IC is defective, the corresponding flash time is longer.</p> <p>1. OK</p> <p>2. CPL CPU defective</p> <p>3. CPR CPU defective</p> <p>NOTE : ● indicates short flash time = OK<br/>           ■ indicates long flash time = Defective</p>                                                                                                                               |                                                                                                                                                                                           |

| No. | PCB                | TEST MODE                                                                                                                                                                                                                                                                                                                                     | Procedure                                                                                                                                                                                                   |
|-----|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4   | MAIN               | Wave ROM check<br>MAIN : IC13, 14, 15                                                                                                                                                                                                                                                                                                         | 1. Press and hold the two E keys shown below, and then turn on the power switch.<br>2. Select the SPECIAL PERC sound.<br> |
|     |                    | When set to the self-diagnostic mode, the Wave ROM outputs a sine wave. The Wave ROMs correspond to the keyboard keys as shown in the diagram to the right. When a key is pressed, the corresponding sine wave sound is produced. If no sound is produced, or if the sound is distorted, the Wave ROM corresponding to that key is defective. | • The key number indicates the Wave ROM number.<br>(1:IC13, 2:IC14, 3:IC15)<br>                                           |
| 5   | CPL<br>CPR<br>CPSQ | LED & SW check                                                                                                                                                                                                                                                                                                                                | Press and hold the two F keys shown below, and then turn on the power switch.<br>                                         |
|     |                    | All the LEDs turn off after lighting once. Confirm that all the LEDs light.                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                             |
| 6   | MKB                | Keyboard ROM (IC2) check                                                                                                                                                                                                                                                                                                                      | While pressing the two B keys simultaneously, turn on the power switch.<br>                                               |
|     |                    | If the keyboard ROM (IC2) is OK, one confirming beep will sound. If it is defective, several consecutive error beeps will sound.                                                                                                                                                                                                              |                                                                                                                                                                                                             |

## ■ Check point of No.2



## ■ Connection between serving CHECKING DEVICE and MAIN P.C.B.



# MIDI IMPLEMENTATION CHART

Digital Ensemble [SX-PR303]

(Transmitted)

| Function         |                     | RIGHT, PART2,<br>PART4~15                                                                                                                                                                                            | LEFT   | PART16 | ACMP1    | ACMP<br>2,3 | BASS     | DRUMS  | CHORD  | CONTROL             | Remarks                                                                                                                                                                                                                                                          |
|------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|----------|-------------|----------|--------|--------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic Channel    | Default             | 1-16                                                                                                                                                                                                                 | 1-16   | 1-16   | 1-16     | 1-16        | 1-16     | 1-16   | 1-16   | 1-16                | memorized                                                                                                                                                                                                                                                        |
|                  | Changed             | 1-16                                                                                                                                                                                                                 | 1-16   | 1-16   | 1-16     | 1-16        | 1-16     | 1-16   | 1-16   | 1-16                |                                                                                                                                                                                                                                                                  |
| Mode             | Default             | 3                                                                                                                                                                                                                    | 3      | 3      | 3        | 3           | 3        | 3      | 3      | 3                   | OMNI OFF,POLY MODE                                                                                                                                                                                                                                               |
|                  | Messages            | ×                                                                                                                                                                                                                    | ×      | ×      | ×        | ×           | ×        | ×      | ×      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | Altered             | —                                                                                                                                                                                                                    | ×      | —      | —        | —           | —        | —      | —      | —                   |                                                                                                                                                                                                                                                                  |
| Note Number      | True voice          | 0-119                                                                                                                                                                                                                | 0-119  | 0-119  | 0-119    | 0-119       | 0-119    | 0-119  | 0-119  | —                   | Changes depending on the position of the transpose control,octave shift,and drums type.                                                                                                                                                                          |
| Velocity         | Note ON<br>Note OFF | ○<br>×                                                                                                                                                                                                               | ○<br>× | ○<br>× | ○<br>×   | ○<br>×      | ○<br>×   | ○<br>× | ○<br>× | —<br>—              |                                                                                                                                                                                                                                                                  |
| After Touch      | Key's<br>Ch's       | ×                                                                                                                                                                                                                    | ×      | ×      | ×        | ×           | ×        | ×      | ×      | —<br>—              |                                                                                                                                                                                                                                                                  |
| Pitch Bender     |                     | ○*                                                                                                                                                                                                                   | ○*     | ×      | ○*       | ○*          | ○*       | ×      | ○*     | ×                   |                                                                                                                                                                                                                                                                  |
| Control Change   | 0,32                | ○                                                                                                                                                                                                                    | ○      | ○      | ○**      | ○**         | ○**      | ○      | ○      | ×                   | bank select MSB, LSB modulation<br>data entry MSB, LSB volume<br>panpot<br>expression<br>sustain<br>sostenute pedal<br>soft pedal<br>auto play chord<br>intro, fill in, ending reverb<br>digital effect<br>RPN LSB, MSB<br>all sound off<br>reset all cotrollers |
|                  | 1                   | ○*                                                                                                                                                                                                                   | ○*     | ×      | ○*       | ○*          | ○*       | ×      | ○*     | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 6,38                | ○                                                                                                                                                                                                                    | ○      | ×      | ×        | ×           | ×        | ×      | ×      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 7                   | ○                                                                                                                                                                                                                    | ○      | ○      | ○        | ○           | ○        | ○      | ○      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 10                  | ○                                                                                                                                                                                                                    | ○      | ×      | ×        | ×           | ×        | ×      | ×      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 11                  | ○*                                                                                                                                                                                                                   | ○*     | ○*     | ×        | ×           | ×        | ×      | ×      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 64                  | ○                                                                                                                                                                                                                    | ○      | ×      | ○**      | ○**         | ○**      | ×      | ×      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 66                  | ○                                                                                                                                                                                                                    | ○      | ×      | ×        | ×           | ×        | ×      | ×      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 67                  | ○                                                                                                                                                                                                                    | ○      | ×      | ×        | ×           | ×        | ×      | ×      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 80                  | ×                                                                                                                                                                                                                    | ○      | ×      | ×        | ×           | ×        | ×      | ×      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 82                  | ×                                                                                                                                                                                                                    | ×      | ×      | ×        | ×           | ×        | ○      | ×      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 91                  | ○                                                                                                                                                                                                                    | ○      | ○      | ○        | ○           | ○        | ○      | ○      | ○                   |                                                                                                                                                                                                                                                                  |
|                  | 93                  | ○                                                                                                                                                                                                                    | ○      | ×      | ○**      | ○**         | ○**      | ×      | ○      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 100,101             | ○                                                                                                                                                                                                                    | ○      | ×      | ×        | ×           | ×        | ×      | ×      | ×                   |                                                                                                                                                                                                                                                                  |
|                  | 120                 | ○*                                                                                                                                                                                                                   | ○*     | ○*     | ×        | ×           | ×        | ×      | ×      | ×                   |                                                                                                                                                                                                                                                                  |
| 121              | ○*                  | ○*                                                                                                                                                                                                                   | ○*     | ×      | ×        | ×           | ×        | ×      | ×      |                     |                                                                                                                                                                                                                                                                  |
| Prog Change      | True #              | ○<br>—                                                                                                                                                                                                               | ○<br>— | ○<br>— | ○**<br>— | ○**<br>—    | ○**<br>— | ○<br>— | ○<br>— | ×                   | Changes depending on program change mode and prog.cng to p.mem.                                                                                                                                                                                                  |
| System exclusive |                     | ○                                                                                                                                                                                                                    |        |        |          |             |          |        |        |                     |                                                                                                                                                                                                                                                                  |
| System common    | Song Pos            | ○×*                                                                                                                                                                                                                  |        |        |          |             |          |        |        | 0-19                |                                                                                                                                                                                                                                                                  |
|                  | Song Sel            | ○×*                                                                                                                                                                                                                  |        |        |          |             |          |        |        |                     |                                                                                                                                                                                                                                                                  |
|                  | Tune                | ×                                                                                                                                                                                                                    |        |        |          |             |          |        |        |                     |                                                                                                                                                                                                                                                                  |
| System Real Time | Clock               | ○                                                                                                                                                                                                                    |        |        |          |             |          |        |        | start/stop,continue |                                                                                                                                                                                                                                                                  |
| Commands         |                     | ○×*                                                                                                                                                                                                                  |        |        |          |             |          |        |        |                     |                                                                                                                                                                                                                                                                  |
| Aux Messages     | Local ON/ OFF       | ×                                                                                                                                                                                                                    | ×      | ×      | ×        | ×           | ×        | ×      | ×      | —                   |                                                                                                                                                                                                                                                                  |
|                  | All notes OFF       | ×                                                                                                                                                                                                                    | ×      | ×      | ×        | ×           | ×        | ×      | ×      | —                   |                                                                                                                                                                                                                                                                  |
|                  | Active Sense        | ○                                                                                                                                                                                                                    |        |        |          |             |          |        |        |                     |                                                                                                                                                                                                                                                                  |
|                  | Reset               | ×                                                                                                                                                                                                                    |        |        |          |             |          |        |        |                     |                                                                                                                                                                                                                                                                  |
| Notes            |                     | ○×*.....Whether or not the data for each of these items is transmitted can be set.<br>○* .....Transmitted during SEQUENCER playback and during rhythm performance.<br>○**.....Transmitted during COMPOSER recording. |        |        |          |             |          |        |        |                     |                                                                                                                                                                                                                                                                  |

Mode 1: OMNI ON, POLY  
Mode 3: OMNI OFF, POLY

Mode 2: OMNI ON, MONO  
Mode 4: OMNI OFF, MONO

○:Yes  
×:No **I-16**

| Function         |               | RIGHT, PART2,<br>PART4~15                                                                                                         | LEFT  | PART16 | ACMP1 | ACMP2,3 | BASS  | DRUMS | CHORD | CONTROL | Remarks                                                                                                                                                                                                                                                             |
|------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|---------|-------|-------|-------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Basic Channel    | Default       | 1-16                                                                                                                              | 1-16  | 1-16   | 1-16  | 1-16    | 1-16  | 1-16  | 1-16  | 1-16    | memorized                                                                                                                                                                                                                                                           |
|                  | Changed       | 1-16                                                                                                                              | 1-16  | 1-16   | 1-16  | 1-16    | 1-16  | 1-16  | 1-16  | 1-16    |                                                                                                                                                                                                                                                                     |
| Mode             | Default       | 3                                                                                                                                 | 3     | 3      | 3     | 3       | 3     | 3     | 3     | 3       | OMNI OFF,POLY MODE                                                                                                                                                                                                                                                  |
|                  | Messages      | ×                                                                                                                                 | ×     | ×      | ×     | ×       | ×     | ×     | ×     | ×       |                                                                                                                                                                                                                                                                     |
|                  | Altered       | —                                                                                                                                 | —     | —      | —     | —       | —     | —     | —     | —       |                                                                                                                                                                                                                                                                     |
| Note Number      | True voice    | 0-127                                                                                                                             | 0-127 | 0-127  | 0-127 | 0-127   | 0-127 | 0-127 | 0-127 | —       | Changes depending on the position of the transpose control,octave shift, and drums type.                                                                                                                                                                            |
| Velocity         | Note ON       | ○                                                                                                                                 | ○     | ○      | ○     | ○       | ○     | ○     | ○     | —       |                                                                                                                                                                                                                                                                     |
|                  | Note OFF      | ×                                                                                                                                 | ×     | ×      | ×     | ×       | ×     | ×     | ×     | —       |                                                                                                                                                                                                                                                                     |
| After Touch      | Key's         | ×                                                                                                                                 | ×     | ×      | ×     | ×       | ×     | ×     | ×     | —       |                                                                                                                                                                                                                                                                     |
|                  | Ch's          | ×                                                                                                                                 | ×     | ×      | ×     | ×       | ×     | ×     | ×     | —       |                                                                                                                                                                                                                                                                     |
| Pitch Bender     |               | ○                                                                                                                                 | ○     | ×      | ○     | ○       | ○     | ×     | ○     | —       |                                                                                                                                                                                                                                                                     |
| Control Change   | 0,32          | ○                                                                                                                                 | ○     | ○      | ○**   | ○**     | ○**   | ○     | ○     | ×       | bank select MSB, LSB modulation<br>data entry MSB, LSB volume<br>panpot<br>expression<br>sustain<br>sostenute pedal<br>soft pedal<br>auto play chord<br>intro, fill in, ending<br>reverb<br>digital effect<br>RPN LSB, MSB<br>all sound off<br>reset all cotrollers |
|                  | 1             | ○                                                                                                                                 | ○     | ×      | ○     | ○       | ○     | ×     | ○     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 6,38          | ○                                                                                                                                 | ○     | ×      | ×     | ×       | ×     | ×     | ×     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 7             | ○                                                                                                                                 | ○     | ○      | ○     | ○       | ○     | ○     | ○     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 10            | ○                                                                                                                                 | ○     | ×      | ×     | ×       | ×     | ×     | ×     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 11            | ○                                                                                                                                 | ○     | ○      | ×     | ×       | ×     | ×     | ×     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 64            | ○                                                                                                                                 | ○     | ×      | ○**   | ○**     | ○**   | ×     | ×     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 66            | ○                                                                                                                                 | ○     | ×      | ×     | ×       | ×     | ×     | ×     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 67            | ○                                                                                                                                 | ○     | ×      | ×     | ×       | ×     | ×     | ×     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 80            | ×                                                                                                                                 | ○     | ×      | ×     | ×       | ×     | ×     | ×     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 82            | ×                                                                                                                                 | ×     | ×      | ×     | ×       | ×     | ○     | ×     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 91            | ○                                                                                                                                 | ○     | ○      | ○     | ○       | ○     | ○     | ○     | ○       |                                                                                                                                                                                                                                                                     |
|                  | 93            | ○                                                                                                                                 | ○     | ×      | ○**   | ○**     | ○**   | ×     | ○     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 100,101       | ○                                                                                                                                 | ○     | ×      | ×     | ×       | ×     | ×     | ×     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 120           | ○                                                                                                                                 | ○     | ○      | ○     | ○       | ○     | ○     | ○     | ×       |                                                                                                                                                                                                                                                                     |
|                  | 121           | ○                                                                                                                                 | ○     | ○      | ○     | ○       | ○     | ○     | ○     | ×       |                                                                                                                                                                                                                                                                     |
| Prog Change      | True #        | ○                                                                                                                                 | ○     | ○      | ○**   | ○**     | ○**   | ○     | ○     | ×       | Changes depending on program change mode and prog.cng to p.mem.                                                                                                                                                                                                     |
|                  |               | 0-127                                                                                                                             | 0-127 | 0-127  | 0-127 | 0-127   | 0-127 | 0-127 | 0-127 | —       |                                                                                                                                                                                                                                                                     |
| System exclusive |               | ○                                                                                                                                 |       |        |       |         |       |       |       |         |                                                                                                                                                                                                                                                                     |
| System common    | Song Pos      | ○×*                                                                                                                               |       |        |       |         |       |       |       |         | 0-19                                                                                                                                                                                                                                                                |
|                  | Song Sel      | ○×*                                                                                                                               |       |        |       |         |       |       |       |         |                                                                                                                                                                                                                                                                     |
|                  | Tune          | ×                                                                                                                                 |       |        |       |         |       |       |       |         |                                                                                                                                                                                                                                                                     |
| System           | Clock         | ○                                                                                                                                 |       |        |       |         |       |       |       |         | start/stop,continue                                                                                                                                                                                                                                                 |
| Real Time        | Commands      | ○×*                                                                                                                               |       |        |       |         |       |       |       |         |                                                                                                                                                                                                                                                                     |
| Aux Messages     | Local ON/ OFF | ×                                                                                                                                 | ×     | ×      | ×     | ×       | ×     | ×     | ×     | —       |                                                                                                                                                                                                                                                                     |
|                  | All notes OFF | ○                                                                                                                                 | ○     | ○      | ○     | ○       | ○     | ○     | ○     | —       |                                                                                                                                                                                                                                                                     |
|                  | Active Sense  | ○                                                                                                                                 |       |        |       |         |       |       |       |         |                                                                                                                                                                                                                                                                     |
|                  | Reset         | ×                                                                                                                                 |       |        |       |         |       |       |       |         |                                                                                                                                                                                                                                                                     |
| Notes            |               | ○×*.....Whether or not the data for each of these items is received can be set.<br>○** .....Recognized during COMPOSER recording. |       |        |       |         |       |       |       |         |                                                                                                                                                                                                                                                                     |

## PRECAUTIONS BEFORE SERVICING

### ■ Precautions for measuring of the output waveforms.

1. The waveform was measured with a "National Digital Storage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may differ somewhat due to the difference in the timing of triggering.
2. Since the 1/10 test probe is used, the indicated voltage value on the bottom part of each waveform photo is 1/10 of the actual value (e.g. 0.2 V/cm should be 2.0 V/cm).
3. To measure the waveforms, first set this unit to the self-diagnostic mode (refer to page I-15, No. 4). The Wave ROM output will then be output as a sine wave to facilitate the servicing check.

**■ Important safety notice:**

Components identified by a  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

## ■ Symbolic Marks

The symbolic marks for resistors and capacitors which used in this circuits are classified as following TABLE-1 and TABLE-2.

## 1. RESISTORS

- Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
- All resistors are 1/4 WATT,  $\pm 5\%$  TOLERANCE unless otherwise designated in schematic diagrams.

(TABLE-1)

| SYMBOL | SPECIFICATION                                                        | SYMBOL | SPECIFICATION                                                            |
|--------|----------------------------------------------------------------------|--------|--------------------------------------------------------------------------|
| Ⓕ      | Fixed Carbon Film Resistors<br>" FLAME-PROOF " (ERD—type)            | Ⓕ      | Fixed Metal Film Resistors<br>" FLAME-PROOF " (ERX—type)                 |
| Ⓖ      | Fixed Wire Wound Resistors<br>" FLAME-PROOF " (ERF—type)             | Ⓖ      | Fuse Type Fixed Metal Oxide Film Resistors<br>" FLAME-PROOF " (ERQ—type) |
| Ⓕ      | Fixed Metal Oxide Film Resistors<br>" FLAME-PROOF " (ERG—type)       | Ⓖ      | Fuse Type Fixed Carbon Film Resistors<br>" FLAME-PROOF " (ERD2FC—type)   |
| Ⓖ      | Fixed Metal Film Resistors (Precision and High Stability) (ERO—type) |        |                                                                          |

## 2. CAPACITORS

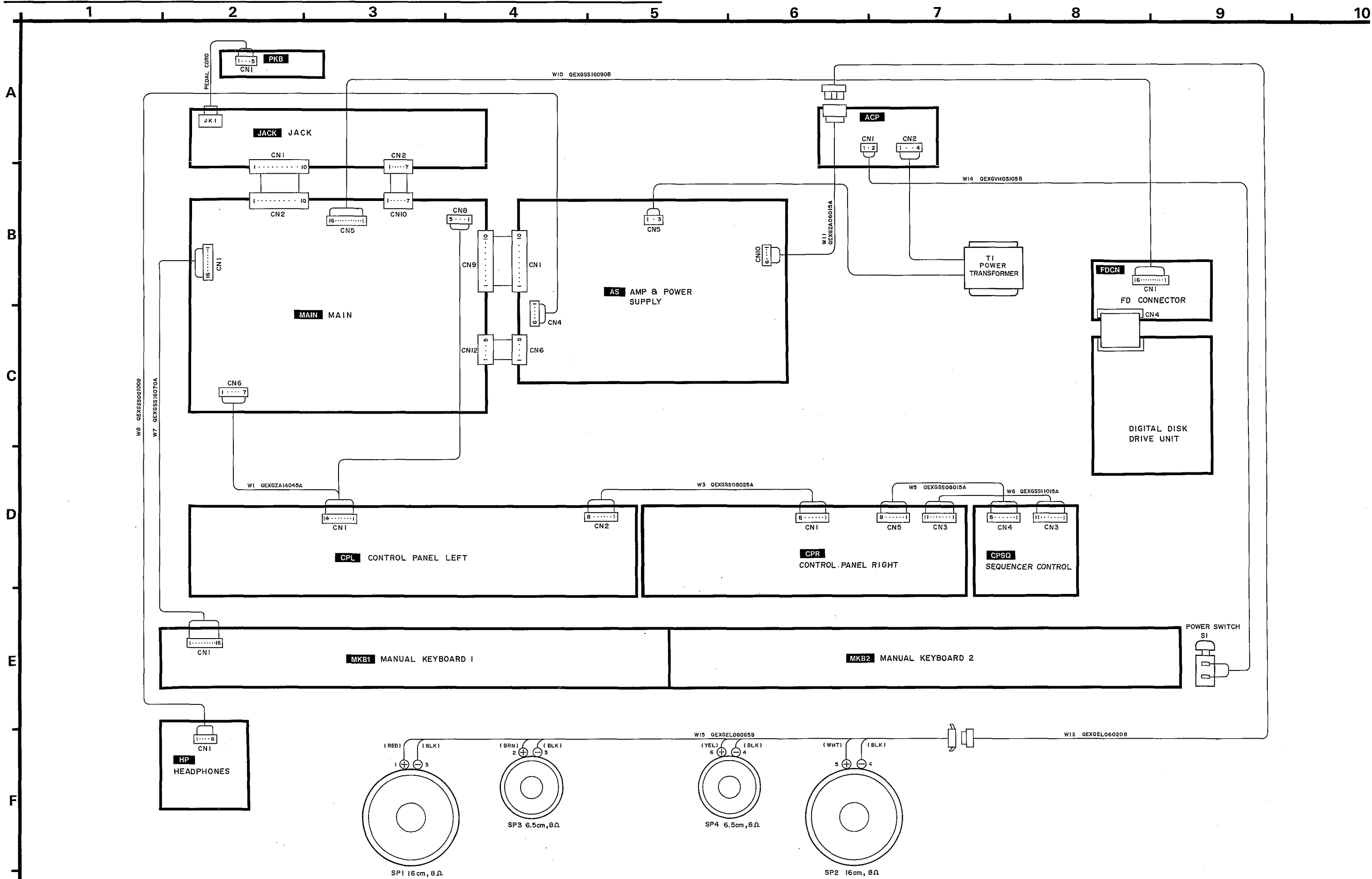
- Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type,  $\pm 10\%$  Tolerance)
- Polarized capacitors without symbolic mark are Aluminum Electrolytic Capacitors. (ECEA-type,  $\pm 20\%$  Tolerance)

(TABLE-2)

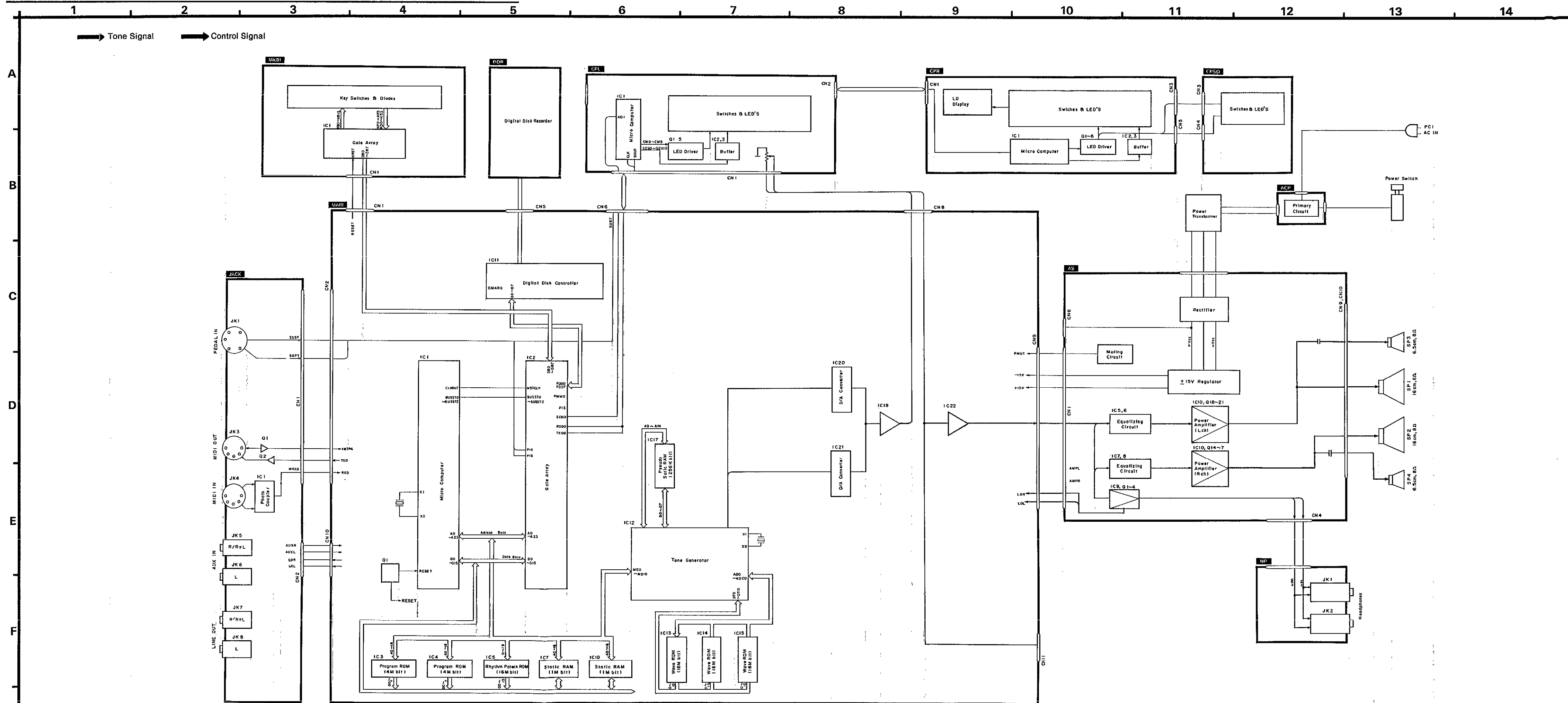
| SYMBOL | SPECIFICATION                                           | TYPE                 |
|--------|---------------------------------------------------------|----------------------|
| Ⓝ      | Non-Polarized Electrolytic Capacitors                   | ECEA_KN_type         |
| Ⓨ      | Non-Polarized Electrolytic (for Network System)         | ECEA_Y_type          |
| Ⓣ      | Tantalum Solid Electrolytic Capacitors                  | ECS_type             |
| Ⓣⓕ     | Metalized Plastic Film Capacitors (TF Series)           | ECQV_type            |
| ○      | Temperature Compensating Ceramic Capacitors             | ECC_type             |
|        | High-Dielectric Constant Ceramic Capacitors             | ECK_type<br>ECR_type |
|        | Axial Lead Ceramic Capacitors                           | ECB_type             |
|        | Metalized Polyester Film Capacitors for Across the Line | ECQ_EW_type          |
|        | Aluminum Electrolytic Capacitors for Smoothing Circuit  | ECES_type            |
|        | Multilayer Ceramic Chip Capacitors                      | ECUV_type            |

# MEMO

WIRING CONNECTION DIAGRAM



# BLOCK DIAGRAM



II-3

II-4

II-5

1 2 3 4 5 6 7 8 9 10 11 12 13 14

JACK

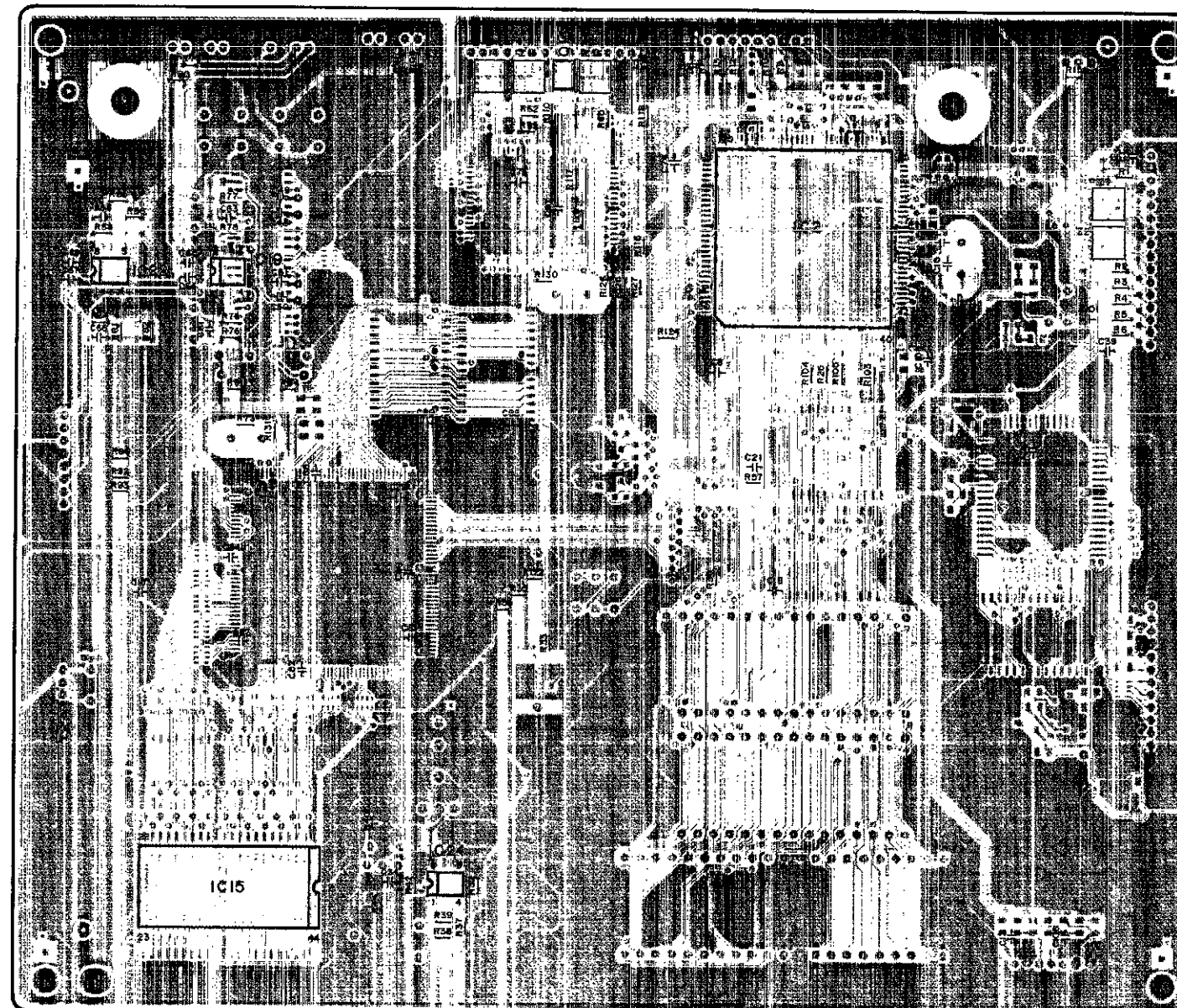
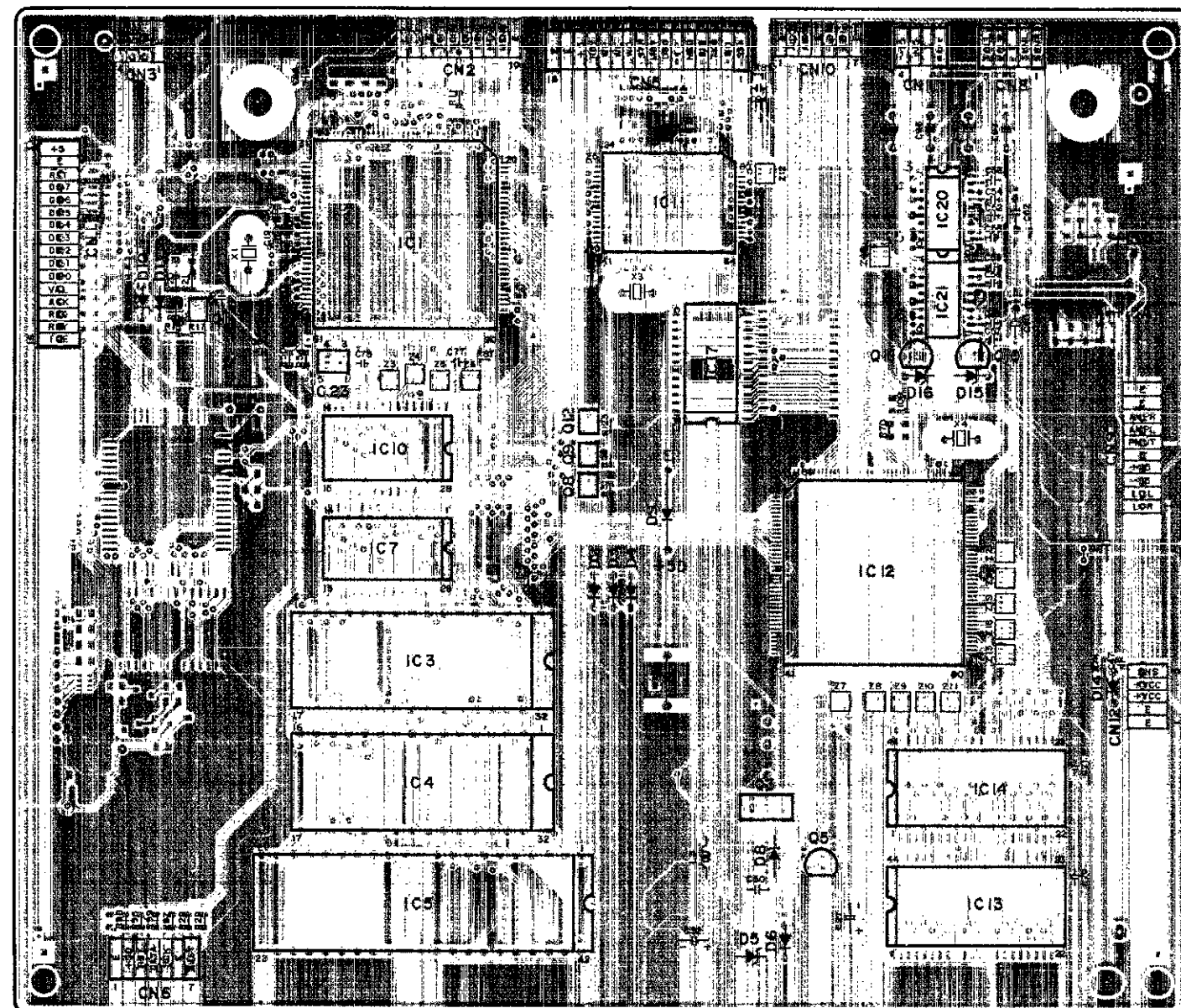
MAIN COMPONENT SIDE

Component Side  
Foil Side

MAIN FOIL SIDE

SXPG217331

SXPG219621

MAIN  
NOTES:

- IC'S
  - IC1: D70236AGD10
  - IC2: D65046GD188
  - IC3: QSIGCR307AX
  - IC4: QSIGCR307BX
  - IC5: QSIGC03C08032
  - IC7, 10: T518129AFWL8
  - IC11: D72068GF-3B9
  - IC12: D93083GDLBD
  - IC13: QSIGH3C16CH3
  - IC14: QSIGH3C16CL0
  - IC15: QSIGH3C08E42
  - IC17: TC51832AFL85
  - IC19, 22: M5218AFP
  - IC20, 21: PCM1702U
  - IC23: TC7S00F
  - IC24: BA10393F
- TRANSISTORS
  - Q1, 14: 2SB709ARTW
  - Q3: 2SB941
  - Q5, 10: 2SC1815GR
  - Q8, 9, 12: 2SD601AQTW
  - Q11: 2SA1015-GR
- DIODES
  - D1~4, 6, 14: MA162A
  - D5: MA1047H
  - D8: MA738
  - D9: MA2052LF
  - D10: MA1030
  - D15, 16: MA1052M

JACK  
NOTES:

- IC
  - IC1: SVIGTLP513
- TRANSISTORS
  - Q1, 2: 2SA1015-GR
- DIODES
  - D4, 6, 7: MA165

# Measuring Condition 波形の測定条件

## Check Point ③~⑧

Set to the self-diagnostic mode followings.

- While pressing two E keys (①) simultaneously, turn on the power switch.

次のように自己診断モードに設定してください。

- 2つのEキー(①)を同時に押しながら、電源スイッチをオンする。

- SOUND..... SPECIAL PERC
- Main Volume..... MAX
- Keyboard..... A<sub>1</sub> (②)

② A<sub>1</sub> Key① E keys  
(E<sub>4</sub>・E<sub>5</sub>)

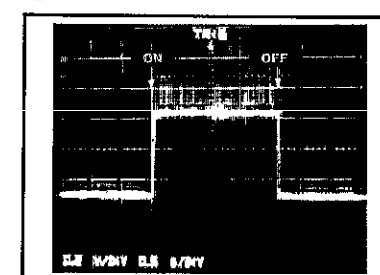
## Check Point ①

Set the Initial setting mode (Refer to page I-6)

イニシャルセッティングを行ってください。(I-3 ページ参照)

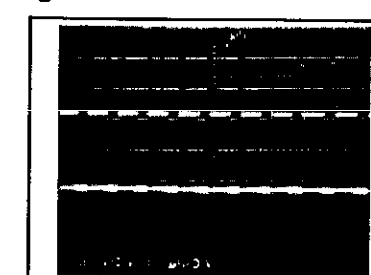
- SOUND..... SPECIAL PERC
- Main Volume..... MAX

## ① RESET

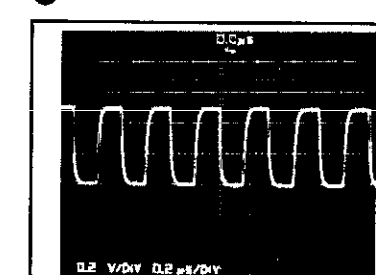


• Power SW..... ON → OFF

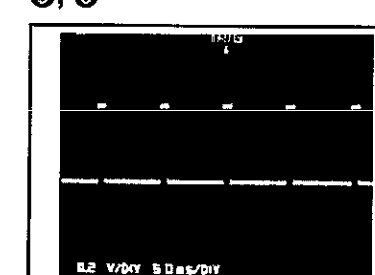
## ③



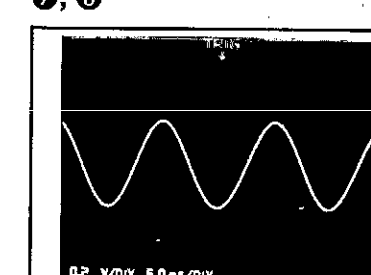
## ④

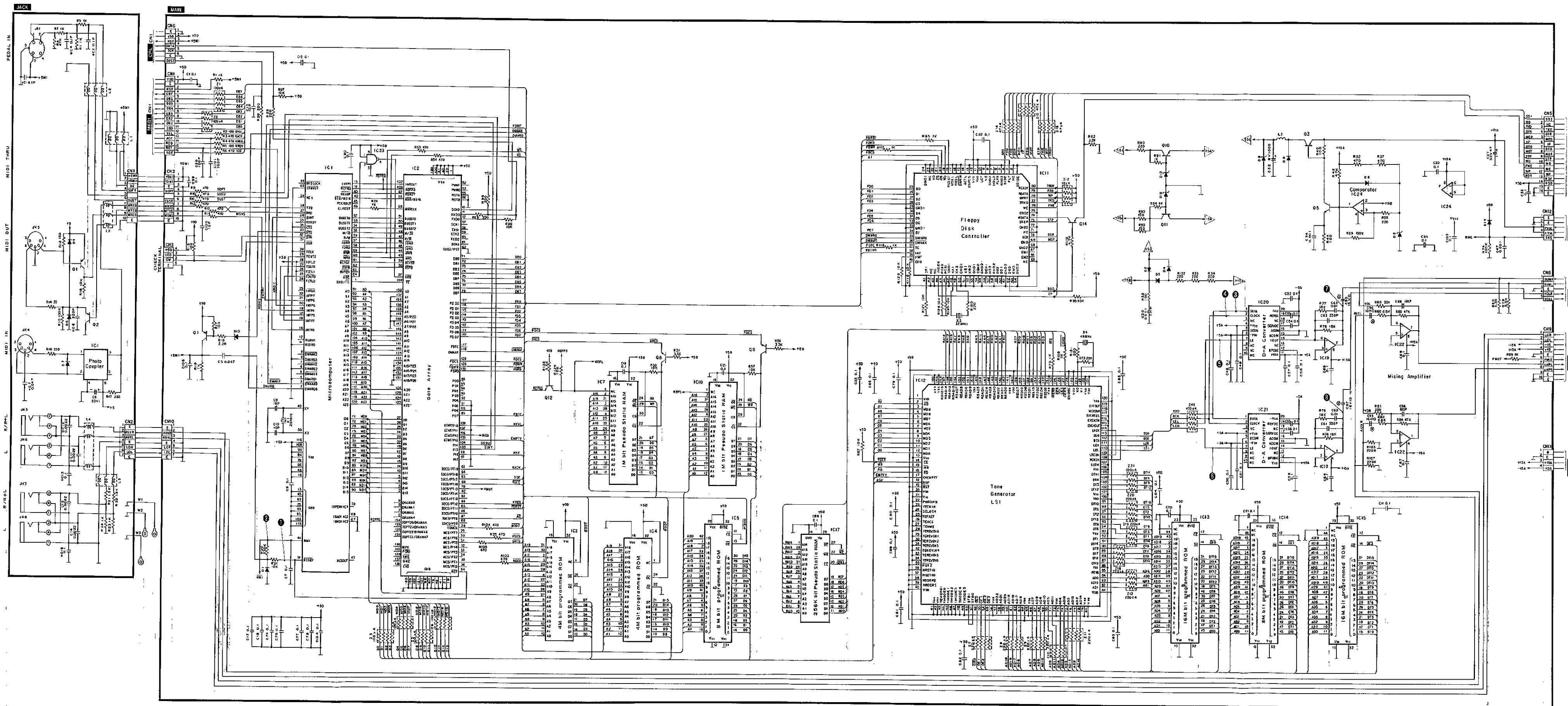


## ⑤, ⑥



## ⑦, ⑧





ACP

[M] [MC] [XM]

SXPG215531

ACP

[X] [XR] [XS] [XD] [XT] [XB]

SXPG215541

ACP

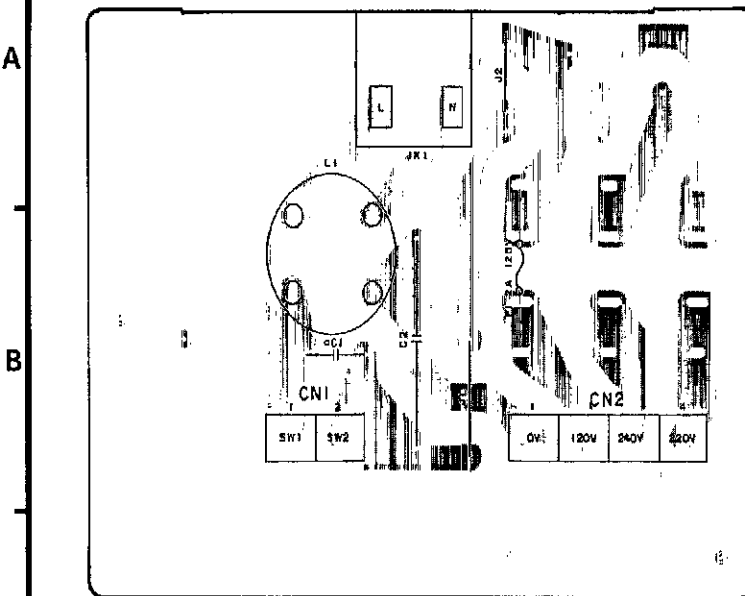
Others

SXPG215511

ACP

日本向

SXPG215521

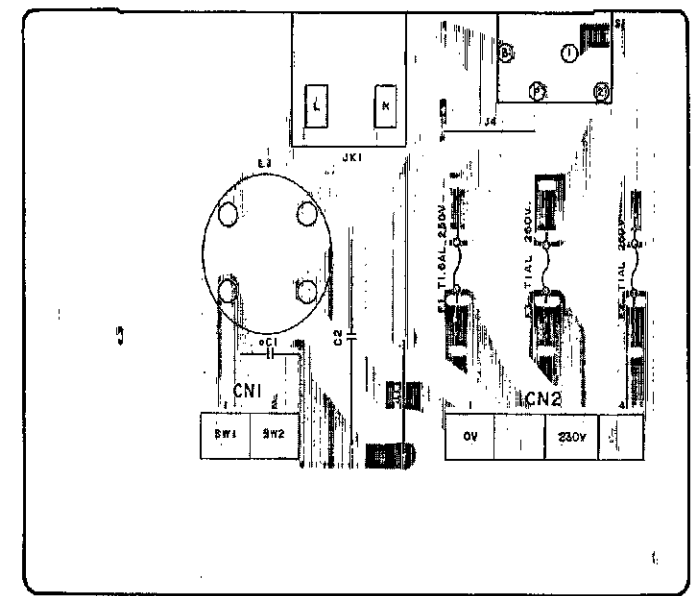


ACP

NOTE:

• FUSE

F1: XBA1C40NU100



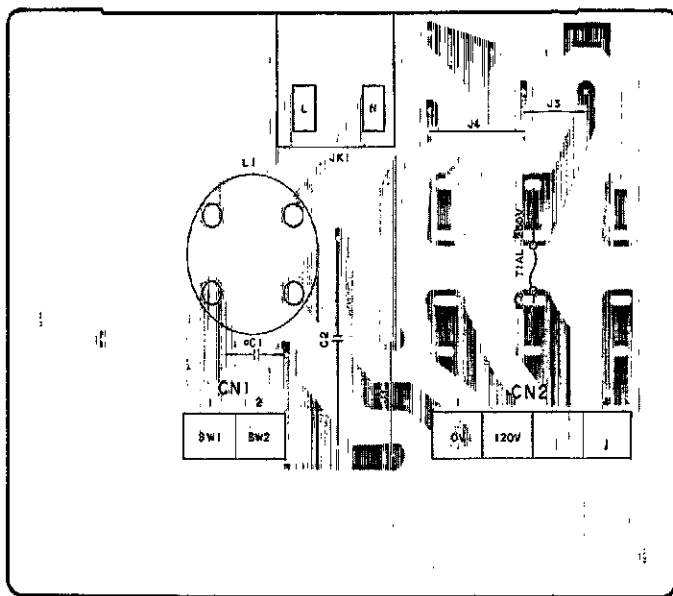
ACP

NOTE:

• FUSES

F1: XBA2C16TB0

F2, 3: XBA2C10TB0

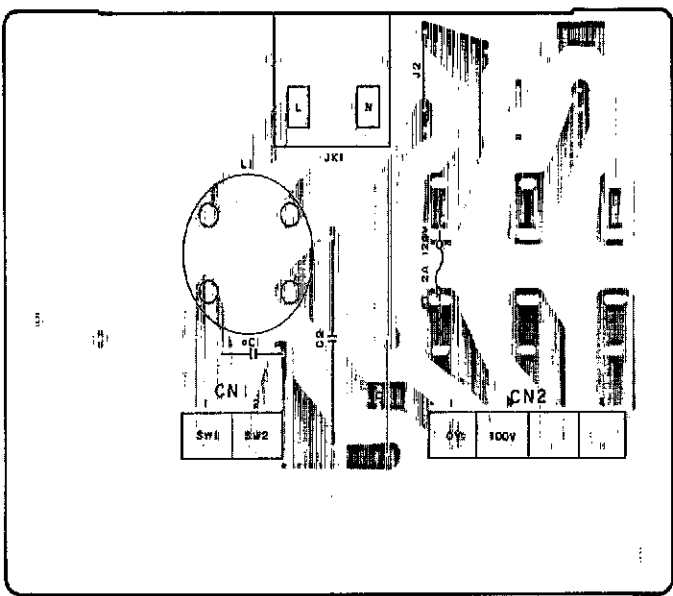


ACP

NOTE:

• FUSE

F3: XBA2C10TB0



ACP

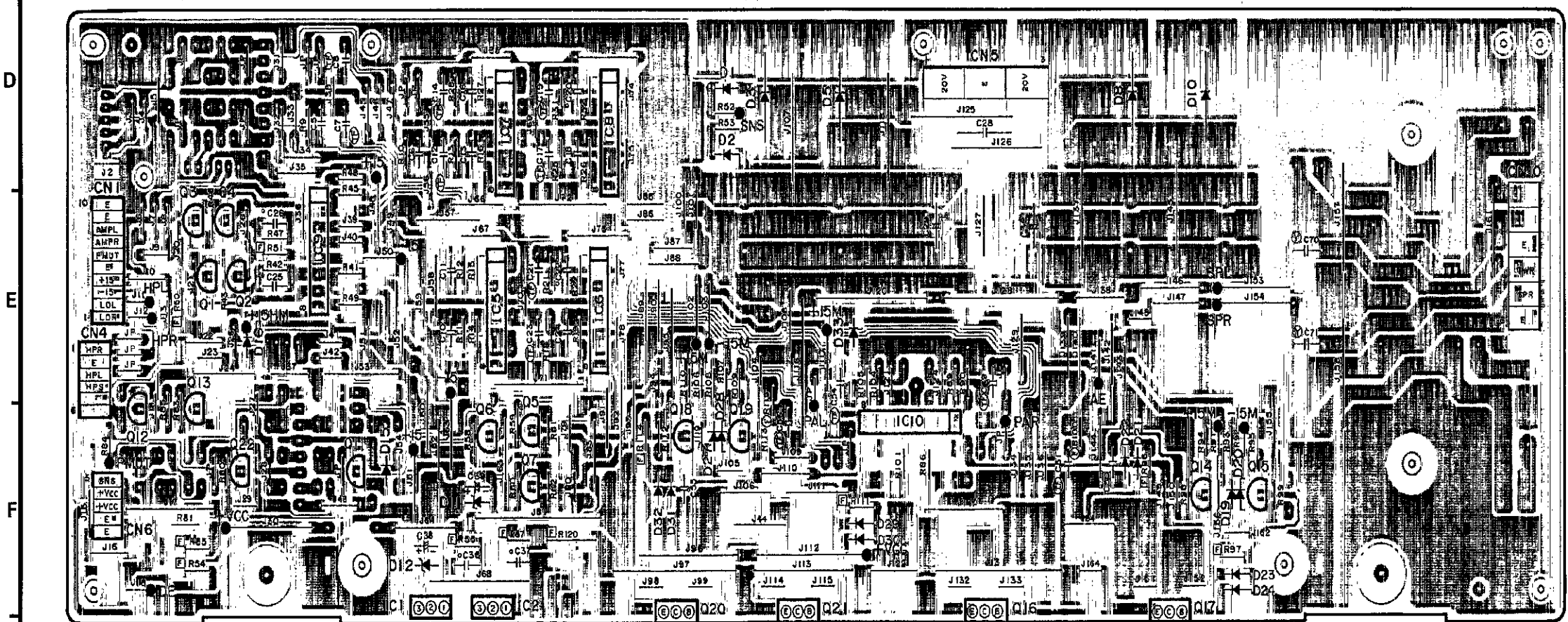
NOTE:

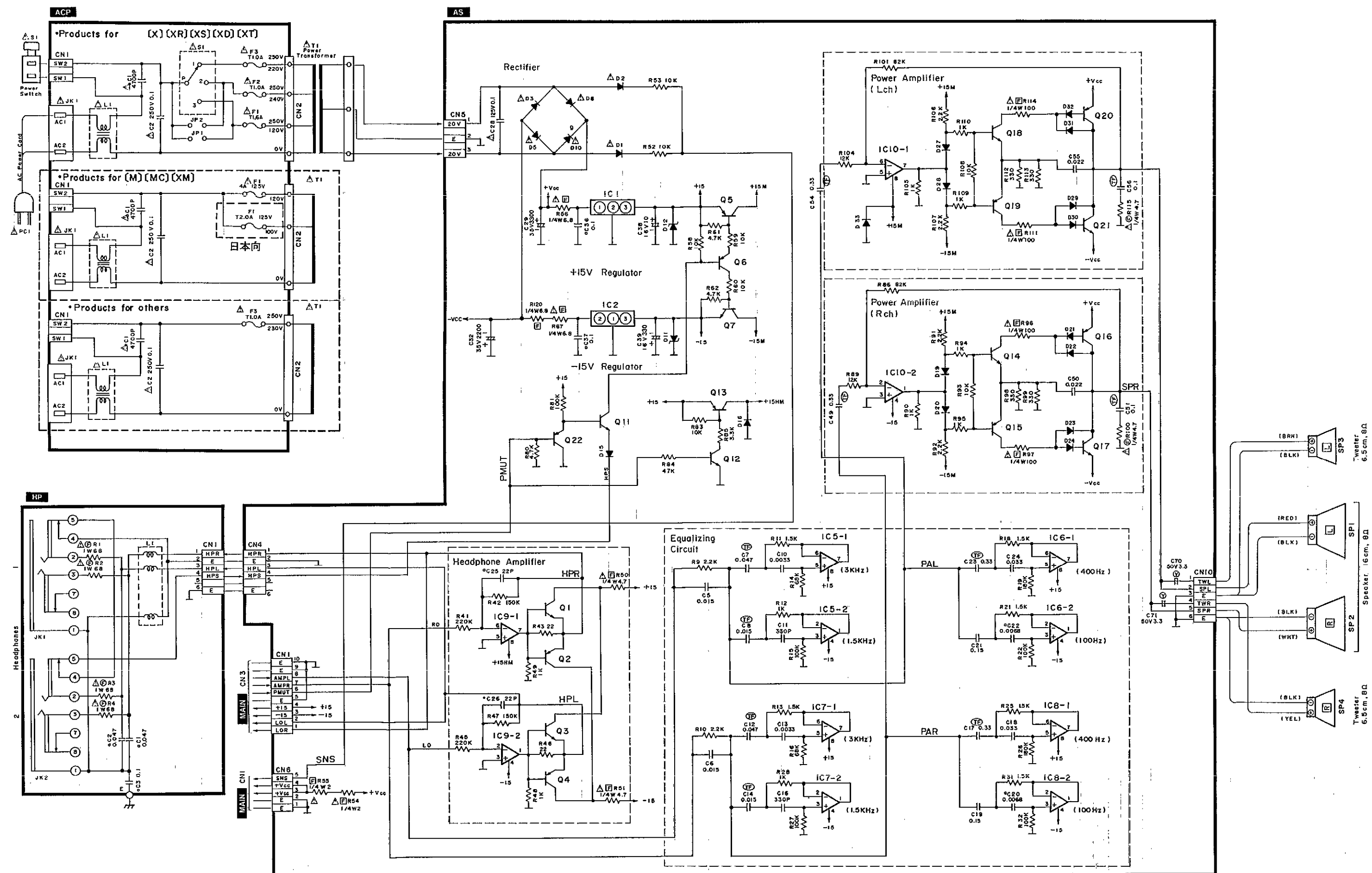
• FUSE

F1: XBA1C60NS5

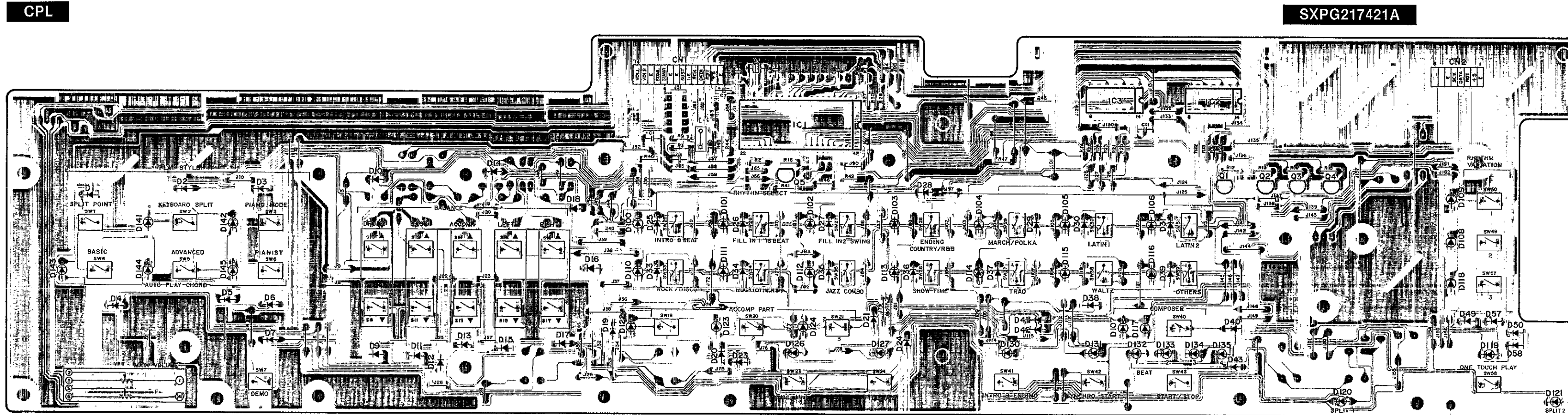
AS

SXPG214751

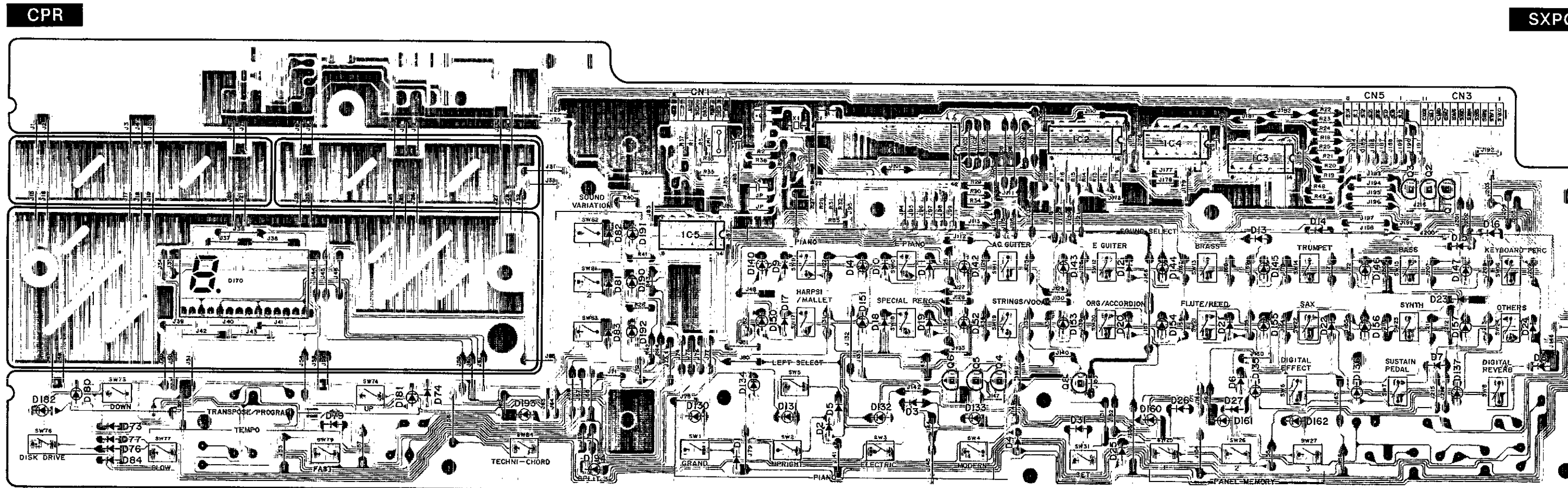




CPL CPR CONTROL PANEL LEFT AND RIGHT CIRCUIT BOARD



- CPL**  
NOTES:
- IC'S  
IC1: M37471M2142S  
IC2, 3: HD74LS07P
  - TRANSISTORS  
Q1: 2SA1015-GR  
Q2: 2SA830SB
  - DIODES  
D1~7, 9~18, MA165  
19~43,  
47~50, 57,  
58:  
D100~106, 108, SEL4117RM  
109, 110~116,  
118, 120~127,  
130~132,  
141~145,  
150~154  
D107, 117, 119, SEL4417G  
133~135:  
• IC PROTECTOR  
IP1: ICP-N10T104



- CPR**  
NOTES:
- IC'S  
IC1: M37471M2196S  
IC2: HD74LS138P  
IC3~5: HD74LS07P
  - TRANSISTORS  
Q1~5: 2SA830SB  
Q6, 8: 2SA1015-GR
  - DIODES  
D1~27, 31, 73, MA165  
74, 76, 77,  
79~84:  
D130~137, SEL4117RM  
140~147,  
150~157, 180,  
181, 190~194:  
D160, 161, 162, SEL4417G  
182:  
• IC PROTECTOR  
IP1: ICP-N10T104

CPL

CPR

## CONTROL PANEL LEFT AND RIGHT CIRCUIT DIAGARAM

A

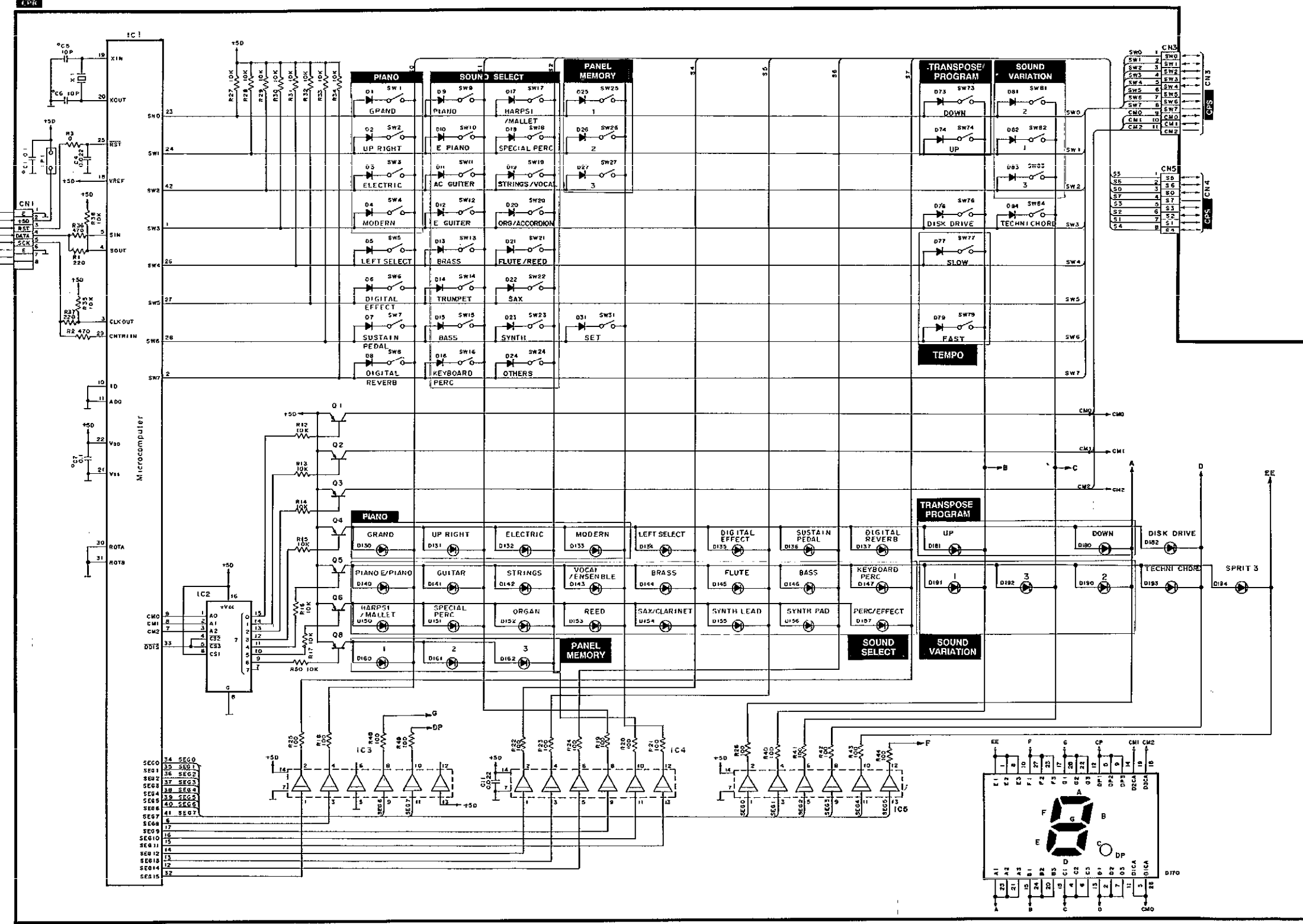
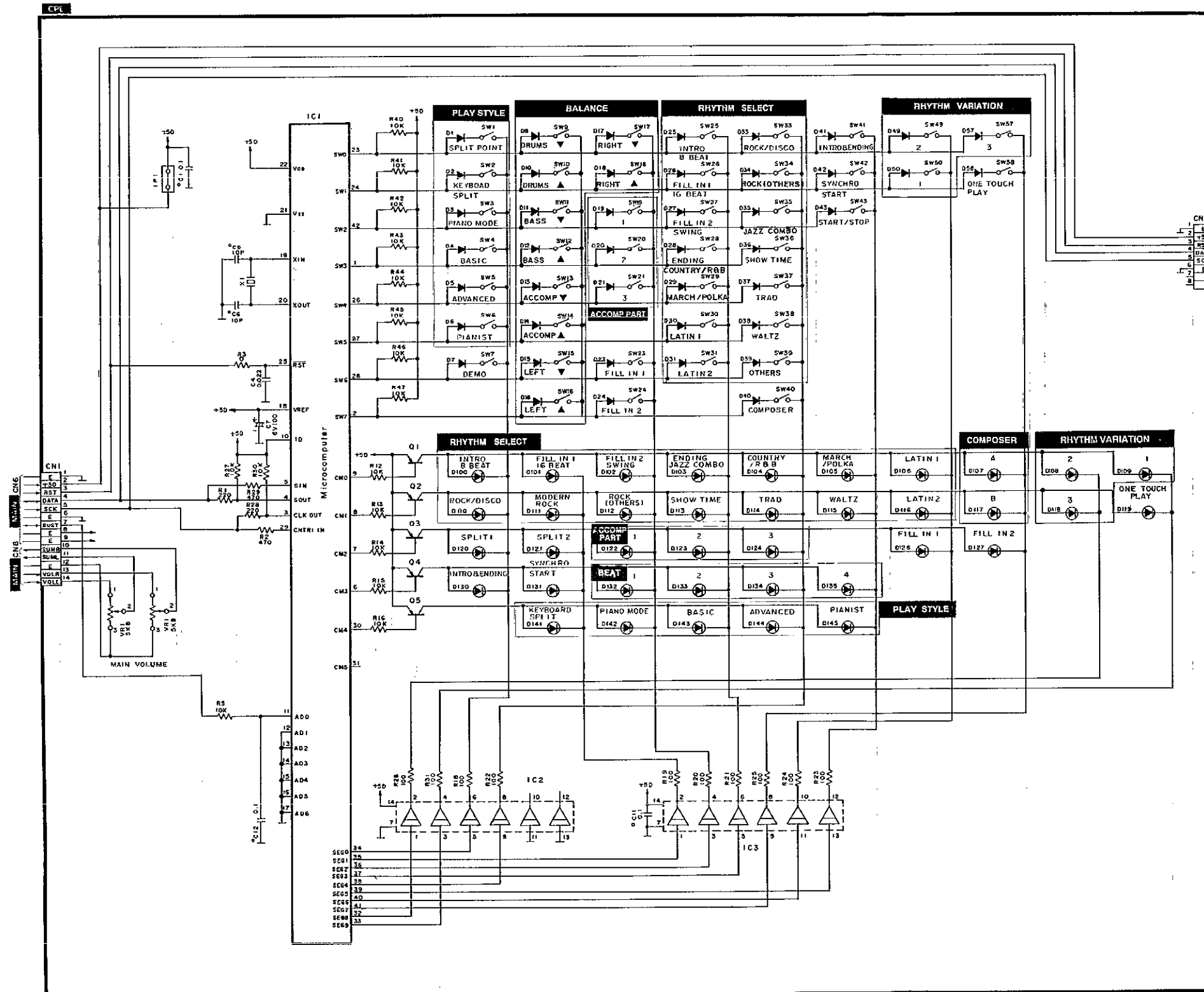
B

C

D

E

F



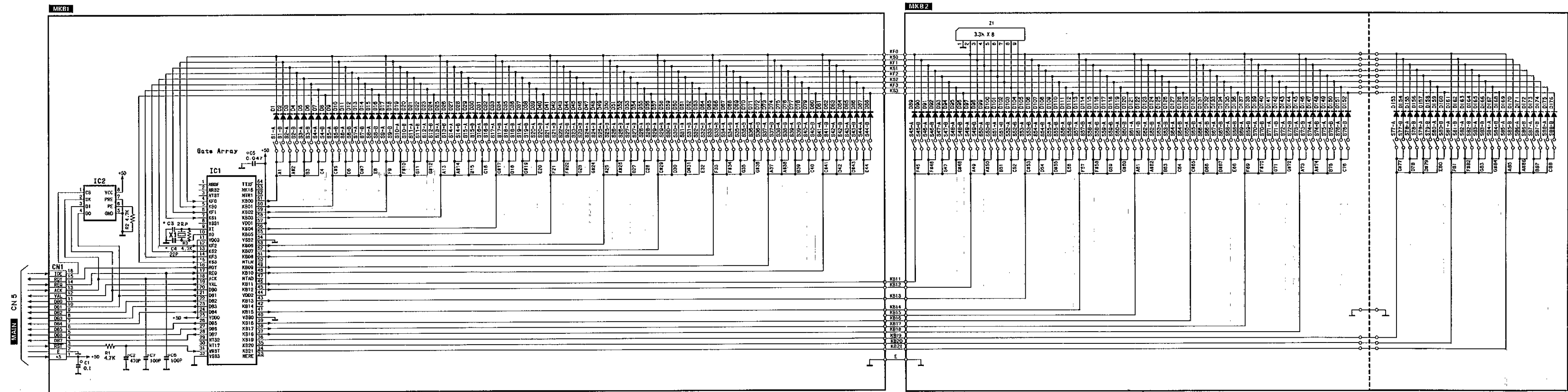


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

A

B

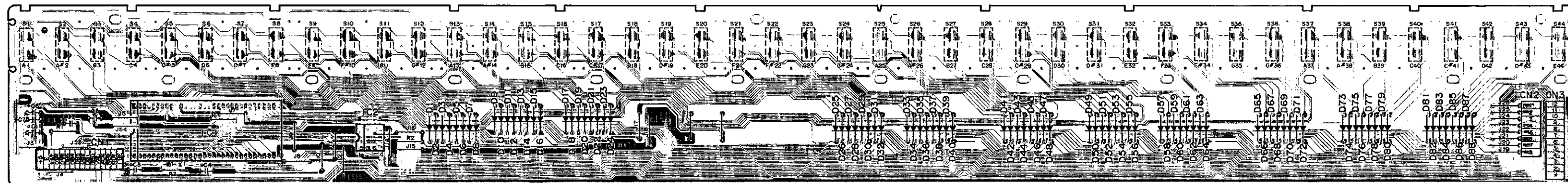
C



MKB1

SXPG209741A

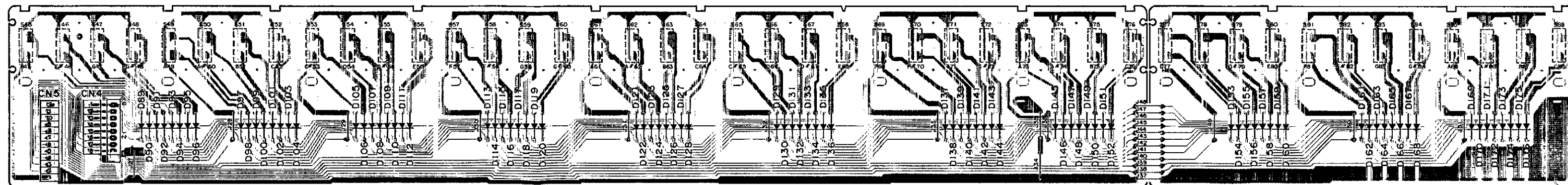
D



MKB2

SXPG209741B

F

**MKB1**  
NOTES:

- IC'S  
IC1: MSM7U042016  
IC2: BR93LC46
- DIODES  
D1~88: MA162A

**MKB2**  
NOTES:

- DIODES  
D1~88: MA162A

# REPLACEMENT PARTS LIST.....P.C.B. and Wiring Parts

## Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.  
After the end of this period, the assembly will no longer be available.

2. Important safety notice  
Components identified by  $\Delta$  mark have special characteristics Important for safety. When replacing any of these components, use only manufacturer's specified parts.  
3. The "S" mark is service standard parts and may differ from production parts.  
4.  $\bigcirc$  mark are new parts.  
5. For part No. with area mark, check the area when placing an order.

## PRINTED CIRCUIT BOARD

| RTL            | Area       | Part No.    | Description | P/S |
|----------------|------------|-------------|-------------|-----|
| $\bigcirc$ RTL |            | SXPG217331  | MAIN        | 1   |
| $\bigcirc$ RTL |            | SXPG217421A | CPL         | 1   |
| $\bigcirc$ RTL |            | SXPG217421B | CPR         | 1   |
| $\bigcirc$ RTL |            | SXPG217521  | CPSQ        | 1   |
| $\bigcirc$ RTL |            | SXPG214751  | AS          | 1   |
| RTL            | Others     | SXPG215511  | ACP         | 1   |
| RTL            | M MC XM    | SXPG215531  | ACP         | 1   |
| RTL            | X YR XS YD | SXPG215541  | ACP         | 1   |
| $\bigcirc$ RTL | XT         | SXPG210841  | HP          | 1   |
| RTL            |            | SXPG217711  | FDCN        | 1   |
| RTL            |            | SXPG218231  | PKB         | 1   |
| RTL            |            | SXPG219621  | JACK        | 1   |
| RTL            |            | SXPG209741A | MKB1        | 1   |
| RTL            |            | SXPG209741B | MKB2        | 1   |

## MAIN MAIN CIRCUIT

| Ref. No.            | Part No.     | Description                | P/S |
|---------------------|--------------|----------------------------|-----|
| INTEGRATED CIRCUITS |              |                            |     |
| IC1                 | D70236AGD10  | Gate Array                 | 1   |
| IC2                 | D65046GD188  | Gate Array                 | 1   |
| IC3                 | QSIGCR307AX  | 4M bit Programmed EP ROM   | 1   |
| IC4                 | QSIGCR307BX  | 4M bit Programmed EP ROM   | 1   |
| IC5                 | QSIG03C08032 | 8M bit Programmed ROM      | 1   |
| IC7, 10             | T518129AFWL8 | 1M bit Pseudo Static RAM   | 2   |
| IC11                | D72068GF-3B9 | Floppy Disk Controller     | 1   |
| IC12                | D93083GDLBD  | Tone Generator LSI         | 1   |
| IC13                | QSIGH3C16CH3 | 16M bit Programmed ROM     | 1   |
| IC14                | QSIGH3C16CLO | 16M bit Programmed ROM     | 1   |
| IC15                | QSIGH3C08E42 | 8M bit Programmed ROM      | 1   |
| IC17                | TC51832AFL85 | 256K bit Pseudo Static RAM | 1   |
| IC19, 22            | M5218AFP     | Operational Amplifier      | 2   |
| IC20, 21            | PCM1702U     | D-A Converter              | 2   |
| IC23                | TC7900F      | NAND GATES                 | 1   |
| IC24                | BA10393F     | Comparator                 | 1   |
| TRANSISTORS         |              |                            |     |
| Q1, 14              | 2SB709ARTW   | Transistor                 | 2   |
| Q3                  | 2SB941       | Transistor                 | 1   |
| Q5, 10              | 2SC1815GR    | Transistor                 | 2   |
| Q8, 9, 12           | 2SD601AQTW   | Transistor                 | 3   |
| Q11                 | 2SA1015-GR   | 2SA933STRS (SUB. Part)     | 1   |

| Ref. No.               | Part No.     | Description               | P/S |
|------------------------|--------------|---------------------------|-----|
| DIODES                 |              |                           |     |
| S D1~4, 6, 14          | MA162A       | MA150IR (SUB. Part)       | 6   |
| D5                     | MA1047H      | Zener, 4.7V               | 1   |
| D8                     | MA738        | Diode                     | 1   |
| D9                     | MA2062LF     | Zener, 6.2V               | 1   |
| D10                    | MA1030       | Zener, 3.0V               | 1   |
| D15, 16                | MA1062M      | Zener, 6.2V               | 2   |
| OSCILLATORS            |              |                           |     |
| X1                     | SVQGA20MX040 | 20MHz, Ceramic Oscillator | 1   |
| X3                     | QXSG113200A  | 32MHz, Quartz Oscillator  | 1   |
| X4                     | QXSG114915A  | 49MHz, Quartz Oscillator  | 1   |
| COMPONENT COMBINATIONS |              |                           |     |
| Z1, 2                  | EXBS8V101J   | 100 $\Omega$ $\times$ 4   | 2   |
| Z3~6                   | EXBV8V101J   | 100 $\Omega$ $\times$ 4   | 4   |
| Z7~11, 13, 18~21       | EXBV8V221J   | 220 $\Omega$ $\times$ 4   | 10  |
| Z12                    | EXBV8V102J   | 1k $\Omega$ $\times$ 4    | 1   |
| Z14~16                 | EXBS8V470J   | 47 $\Omega$ $\times$ 4    | 3   |
| Z46                    | EXBV8V471J   | 470 $\Omega$ $\times$ 4   | 1   |
| COIL                   |              |                           |     |
| L3                     | QLQGT1T121SA | Coil                      | 1   |
| RESISTORS              |              |                           |     |
| R1                     | ERJ6GEYJ102V | 1k $\Omega$               | 1   |
| R2                     | ERJ6GEYJ101V | 100 $\Omega$              | 1   |
| R3, 4                  | ERJ6GEYJ471V | 470 $\Omega$              | 2   |
| R5                     | ERJ6GEYJ101V | 100 $\Omega$              | 1   |
| R6, 9~14               | ERJ6GEYJ471V | 470 $\Omega$              | 7   |
| R15, 17                | ERJ6GEYJ103V | 10k $\Omega$              | 2   |
| R18                    | ERJ6GEYJ222V | 2.2k $\Omega$             | 1   |
| R19                    | ERJ6GEYJ102V | 1k $\Omega$               | 1   |
| R20                    | ERJ6GEYJ334V | 330k $\Omega$             | 1   |
| R21                    | ERJ6GEYJ103V | 10k $\Omega$              | 1   |
| R24                    | ERJ6GEYJ102V | 1k $\Omega$               | 1   |
| R25                    | ERJ6GEYJ471V | 470 $\Omega$              | 1   |
| R28, 29                | ERJ6GEYJ221V | 220 $\Omega$              | 2   |
| R30                    | ERJ6GEYJ103V | 10k $\Omega$              | 1   |
| R31                    | ERJ6GEYJ332V | 3.3k $\Omega$             | 1   |
| R32                    | ERJ6GEYJ471V | 470 $\Omega$              | 1   |
| R33                    | ERJ6GEYJ101V | 100 $\Omega$              | 1   |
| R34, 35                | ERJ6GEYJ221V | 220 $\Omega$              | 2   |
| R37                    | ERJ6GEYJ471V | 470 $\Omega$              | 1   |
| R38                    | ERJ6GEYJ221V | 220 $\Omega$              | 1   |
| R39                    | ERJ6GEYJ104V | 100k $\Omega$             | 1   |

| Ref. No.      | Part No.     | Description              | P/S |
|---------------|--------------|--------------------------|-----|
| R40           | ERJ6GEYJ101V | 100 $\Omega$             | 1   |
| R42           | ERJ6GEYJ472V | 4.7k $\Omega$            | 1   |
| R44           | ERJ6GEYJ101V | 100 $\Omega$             | 1   |
| R50           | ERJ6GEYJ471V | 470 $\Omega$             | 1   |
| R54           | ERJ6GEYJ471V | 470 $\Omega$             | 1   |
| R56           | ERJ6GEYJ332V | 3.3k $\Omega$            | 1   |
| R57           | ERJ6GEYJ103V | 10k $\Omega$             | 1   |
| R62           | ERJ6GEYJ222V | 2.2k $\Omega$            | 1   |
| R65           | ERJ6GEYJ102V | 1k $\Omega$              | 1   |
| R67           | ERJ6GEYJ103V | 10k $\Omega$             | 1   |
| R70           | ERJ6GEYJ102V | 1k $\Omega$              | 1   |
| R73           | ERJ6GEYJ223V | 22k $\Omega$             | 1   |
| R74           | ERJ6GEYJ104V | 100k $\Omega$            | 1   |
| R75~78        | ERJ6GEYJ183V | 18k $\Omega$             | 4   |
| R79, 80       | ERJ6GEYJ332V | 3.3k $\Omega$            | 2   |
| R81           | ERJ6GEYJ333V | 33k $\Omega$             | 1   |
| R82           | ERJ6GEYJ682V | 6.8k $\Omega$            | 1   |
| R84           | ERJ6GEYJ473V | 47k $\Omega$             | 1   |
| R85           | ERJ6GEYJ333V | 33k $\Omega$             | 1   |
| R86           | ERJ6GEYJ682V | 6.8k $\Omega$            | 1   |
| R88           | ERJ6GEYJ473V | 47k $\Omega$             | 1   |
| R89           | ERJ6GEYJ102V | 1k $\Omega$              | 1   |
| R90           | ERJ6GEYJ221V | 220 $\Omega$             | 1   |
| R91           | ERJ6GEYJ102V | 1k $\Omega$              | 1   |
| R92, 93       | ERJ6GEYJ151V | 150 $\Omega$             | 2   |
| R94           | ERJ6GEYJ102V | 1k $\Omega$              | 1   |
| R95           | ERJ6GEYJ103V | 10k $\Omega$             | 1   |
| R96           | ERJ6GEYJ221V | 220 $\Omega$             | 1   |
| R97, 98       | ERJ6GEYJ103V | 10k $\Omega$             | 2   |
| R99           | ERJ6GEYJ221V | 220 $\Omega$             | 1   |
| R103~105      | ERJ6GEYJ471V | 470 $\Omega$             | 3   |
| R106, 107     | ERJ6GEYJ224V | 220k $\Omega$            | 2   |
| R109          | ERJ6GEYJ102V | 1k $\Omega$              | 1   |
| R110          | ERJ6GEYJ472V | 4.7k $\Omega$            | 1   |
| R116          | ERJ6GEYJ103V | 10k $\Omega$             | 1   |
| R117, 118     | ERJ6GEYJ102V | 1k $\Omega$              | 2   |
| R122          | ERJ6GEYJ221V | 220 $\Omega$             | 1   |
| R123          | ERJ6GEYJ332V | 3.3k $\Omega$            | 1   |
| R124~127, 129 | ERJ6GEYJ103V | 10k $\Omega$             | 5   |
| R130, 131     | ERJ6GEYJ221V | 220 $\Omega$             | 2   |
| CAPACITORS    |              |                          |     |
| C1            | ECUV1H104ZFX | 0.1 $\mu$ F              | 1   |
| C5            | ECUV1E473KB  | 0.047 $\mu$ F            | 1   |
| C7, 8         | ECUV1H104ZFX | 0.1 $\mu$ F              | 2   |
| C9, 10        | ECUV1H100DCN | 10pF                     | 2   |
| C11, 12       | ECUV1H104ZFX | 0.1 $\mu$ F              | 2   |
| C13           | ECUV1H100DCN | 10pF                     | 1   |
| C17~19        | ECUV1H104ZFX | 0.1 $\mu$ F              | 3   |
| C20           | EECS85R5V105 | 1F, 5.5V, Memory Back-up | 1   |
| C21, 23       | ECUV1H104ZFX | 0.1 $\mu$ F              | 2   |
| C27           | ECEA1VU470   | 47 $\mu$ F, 35V          | 1   |
| C30           | ECUV1H104ZFX | 0.1 $\mu$ F              | 1   |
| C32           | ECEA0JU102   | 1000 $\mu$ F, 6.3V       | 1   |
| C33           | ECUV1H104ZFX | 0.1 $\mu$ F              | 1   |
| C34           | ECUV1H102JX  | 0.001 $\mu$ F            | 1   |
| C39           | ECUV1H101JG  | 100pF                    | 1   |
| C47           | ECUV1H102JX  | 0.001 $\mu$ F            | 1   |
| C48~59        | ECUV1H104ZFX | 0.1 $\mu$ F              | 12  |
| C60           | ECQB1H103JF  | 0.01 $\mu$ F             | 1   |
| C61           | ECUV1H331JG  | 330pF                    | 1   |
| C62           | ECQB1H103JF  | 0.01 $\mu$ F             | 1   |
| C63           | ECUV1H331JG  | 330pF                    | 1   |
| C64, 65       | ECUV1H104ZFX | 0.1 $\mu$ F              | 2   |
| C66           | ECUV1H101JG  | 100pF                    | 1   |
| C67           | ECUV1H104ZFX | 0.1 $\mu$ F              | 1   |
| C68           | ECUV1H101JG  | 100pF                    | 1   |

III-2

| Ref. No.                                                                       | Part No.             | Description                | P/S |
|--------------------------------------------------------------------------------|----------------------|----------------------------|-----|
| C69~71                                                                         | ECUV1H104ZFX         | 0.1 $\mu$ F                | 3   |
| C74, 75                                                                        | ECUV1H104ZFX         | 0.1 $\mu$ F                | 2   |
| C77~80                                                                         | ECUV1H104ZFX         | 0.1 $\mu$ F                | 14  |
| C93                                                                            | ECEA1CKN100          | 10 $\mu$ F, 16V            | 1   |
| C94                                                                            | ECUV1H104ZFX         | 0.1 $\mu$ F                | 1   |
| C95~97                                                                         | ECEA1CKN100          | 10 $\mu$ F, 16V            | 3   |
| C99                                                                            | ECUV1H104ZFX         | 0.1 $\mu$ F                | 1   |
| C101                                                                           | ECUV1H101JG          | 100pF                      | 1   |
| C103, 104                                                                      | ECUV1H104ZFX         | 0.1 $\mu$ F                | 2   |
| C105                                                                           | ECUV1H100DCN         | 10pF                       | 1   |
| C106                                                                           | ECUV1H104ZFX         | 0.1 $\mu$ F                | 1   |
| CPL CONTROL PANEL LEFT CIRCUIT                                                 |                      |                            |     |
| Ref. No.                                                                       | Part No.             | Description                | P/S |
| INTEGRATED CIRCUITS                                                            |                      |                            |     |
| IC1                                                                            | M37471M2142S         | 8 bit Microcomputer        | 1   |
| IC2, 3                                                                         | HD74LS07P            | Hex Buffers                | 2   |
| TRANSISTORS                                                                    |                      |                            |     |
| S Q1                                                                           | 2SA1015-GR           | 2SA933STRS (SUB. Part)     | 1   |
| Q2~5                                                                           | 2SA830SB             | Transistor                 | 4   |
| DIODES                                                                         |                      |                            |     |
| D1~7, 9~21, 23~31, 33~43, 49, 50, 57, 58                                       | MA165                | Diode                      | 44  |
| D100~106, 108, 109, 110~116, 118, 120~124, 126, 127, 130~132, 141~145, 150~154 | SEL4117RM            | LED (RED)                  | 37  |
| D107, 117, 119, 133~135                                                        | SEL4417G             | LED (Green)                | 6   |
| OSCILLATOR                                                                     |                      |                            |     |
| X1                                                                             | QXSG2F0400DA         | 4MHz Ceramic Oscillator    | 1   |
| SWITCHES                                                                       |                      |                            |     |
| S1~7, 9~31, 33~43, 49, 50, 57, 58                                              | EVQ21507K            | Push Switch                | 45  |
| IC PROTECTOR                                                                   |                      |                            |     |
| IP1                                                                            | $\Delta$ ICP-N10T104 | IC Protector               | 1   |
| VARIABLE RESISTOR                                                              |                      |                            |     |
| VR1                                                                            | QRVG25P01B53         | 5k $\Omega$ B, Main Volume | 1   |
| RESISTORS                                                                      |                      |                            |     |
| R1                                                                             | ERDS2TJ221           | 220 $\Omega$               | 1   |
| R2                                                                             | ERDS2TJ471           | 470 $\Omega$               | 1   |
| R3                                                                             | ERDS2T0              | 0 $\Omega$ , 1/4W          | 1   |
| R12~17                                                                         | ERDS2TJ103           | 10k $\Omega$               | 6   |
| R18~26                                                                         | ERDS2TJ103           | 10k $\Omega$               | 9   |
| R27~35                                                                         | ERDS2TJ103           | 10k $\Omega$               | 9   |
| R36                                                                            | ERDS2TJ471           | 470 $\Omega$               | 1   |
| R37                                                                            | ERDS2TJ221           | 220 $\Omega$               | 1   |
| R38                                                                            | ERDS2TJ103           | 10k $\Omega$               | 1   |
| R40~44, 48, 49                                                                 | ERDS2TJ101           | 100 $\Omega$               | 7   |
| R50                                                                            | ERDS2TJ103           | 10k $\Omega$               | 1   |

III-3

| Ref. No.   | Part No.    | Description | P/S |
|------------|-------------|-------------|-----|
| R31        | ERDS2TJ101  | 100Ω        | 1   |
| R40~47     | ERDS2TJ103  | 10kΩ        | 8   |
| CAPACITORS |             |             |     |
| C1         | ECRF1H104ZF | 0.1μF       | 1   |
| C4         | ECBA1E223ZF | 0.022μF     | 1   |
| C5, 6      | ECCF1H100D  | 10pF        | 2   |
| C7         | ECEA0JKA101 | 100μF, 6.3V | 1   |
| C11, 12    | ECRF1H104ZF | 0.1μF       | 2   |

CPR CONTROL PANEL RIGHT CIRCUIT

| Ref. No.                                      | Part No.      | Description               | P/S |
|-----------------------------------------------|---------------|---------------------------|-----|
| INTEGRATED CIRCUITS                           |               |                           |     |
| IC1                                           | M37471M2198S  | 16 bit Microcomputer      | 1   |
| IC2                                           | HD74LS138P    | 3 to 8 Decoder            | 1   |
| IC3~5                                         | HD74LS07P     | Hex Buffers               | 3   |
| TRANSISTORS                                   |               |                           |     |
| Q1~5                                          | 2SA830SB      | Transistor                | 5   |
| S Q6, 8                                       | 2SA1015-GR    | 2SA933STRS (SUB. Part)    | 2   |
| DIODES                                        |               |                           |     |
| D1~27, 31, 73, 74, 76, 77, 79, 81~84          | MA165         | Diode                     | 37  |
| D130~137, 140~147, 150~157, 180, 181, 190~194 | SEL4117RM     | LED (RED)                 | 31  |
| D160, 161, 162, 182                           | SEL4417G      | LED (Green)               | 4   |
| DISPLAY                                       |               |                           |     |
| D170                                          | LB603VF       | Triple 8 Segments Display | 1   |
| OSCILLATOR                                    |               |                           |     |
| X1                                            | QXSG2F0400DA  | 4MHz Ceramic Oscillator   | 1   |
| SWITCHES                                      |               |                           |     |
| S1~27, 31, 73, 74, 76, 77, 79, 81~84          | EVQ21507K     | Push Switch               | 37  |
| IC PROTECTOR                                  |               |                           |     |
| IP1                                           | Δ ICP-N10T104 | IC Protector              | 1   |
| RESISTORS                                     |               |                           |     |
| R1                                            | ERDS2TJ221    | 220Ω                      | 1   |
| R2                                            | ERDS2TJ471    | 470Ω                      | 1   |
| R3                                            | ERDS2T0       | 0Ω, 1/4W                  | 1   |
| R12~17                                        | ERDS2TJ103    | 10kΩ                      | 6   |
| R18~26                                        | ERDS2TJ101    | 100Ω                      | 9   |
| H27~35                                        | ERDS2TJ103    | 10kΩ                      | 9   |
| R36                                           | ERDS2TJ471    | 470Ω                      | 1   |
| R37                                           | ERDS2TJ221    | 220Ω                      | 1   |
| R38                                           | ERDS2TJ103    | 10kΩ                      | 1   |
| R40~44, 48, 49                                | ERDS2TJ101    | 100Ω                      | 7   |
| R50                                           | ERDS2TJ103    | 10kΩ                      | 1   |

| Ref. No.  | Part No.      | Description             | P/S |
|-----------|---------------|-------------------------|-----|
| R21       | ERDS2TJ152    | 1.5kΩ                   | 1   |
| R22       | ERDS2TJ104    | 100kΩ                   | 1   |
| R25       | ERDS2TJ152    | 1.5kΩ                   | 1   |
| R26       | ERDS2TJ184    | 180kΩ                   | 1   |
| R27       | ERDS2TJ104    | 100kΩ                   | 1   |
| R28       | ERDS2TJ102    | 1kΩ                     | 1   |
| R31       | ERDS2TJ152    | 1.5kΩ                   | 1   |
| R32       | ERDS2TJ104    | 100kΩ                   | 1   |
| R41       | ERDS2TJ224    | 220kΩ                   | 1   |
| R42       | ERDS2TJ154    | 150kΩ                   | 1   |
| R43       | ERDS2TJ220    | 22Ω                     | 1   |
| R45       | ERDS2TJ224    | 220kΩ                   | 1   |
| R46       | ERDS2TJ220    | 22Ω                     | 1   |
| R47       | ERDS2TJ154    | 150kΩ                   | 1   |
| R48, 49   | ERDS2TJ102    | 1kΩ                     | 2   |
| R50, 51   | △ ERD25FVJ4R7 | 4.7Ω, 1/4W, Flame-Proof | 2   |
| R52, 53   | ERDS2TJ103    | 10kΩ                    | 2   |
| R54, 55   | △ ERQ14AJ2R0  | 2Ω, 1/4W, Fuse Type     | 2   |
| R56       | △ ERD2FCJ6R8  | 6.8Ω, 1/4W, Fuse Type   | 1   |
| R58~60    | ERDS2TJ103    | 10kΩ                    | 3   |
| R61, 62   | ERDS2TJ472    | 4.7kΩ                   | 2   |
| R67       | △ ERD2FCJ6R8  | 6.8Ω, 1/4W, Fuse Type   | 1   |
| R80       | ERDS2TJ472    | 4.7kΩ                   | 1   |
| R81       | ERDS2TJ104    | 100kΩ                   | 1   |
| R83       | ERDS2TJ103    | 10kΩ                    | 1   |
| R84       | ERDS2TJ473    | 47kΩ                    | 1   |
| R85       | ERDS2TJ332    | 3.3kΩ                   | 1   |
| R86       | ERDS2TJ823    | 82kΩ                    | 1   |
| R89       | ERDS2TJ123    | 12kΩ                    | 1   |
| R90       | ERDS2TJ102    | 1kΩ                     | 1   |
| R91, 92   | ERDS2TJ222    | 2.2kΩ                   | 2   |
| R93       | ERDS2TJ103    | 10kΩ                    | 1   |
| R94, 95   | ERDS2TJ102    | 1kΩ                     | 2   |
| R96, 97   | △ ERD2FCVG101 | 100Ω, 1/4W, Fuse Type   | 2   |
| R98, 99   | ERDS2TJ331    | 330Ω                    | 2   |
| R100      | △ ERD2FCVJ4R7 | 4.7Ω, 1/4W, Fuse Type   | 1   |
| R101      | ERDS2TJ823    | 82kΩ                    | 1   |
| R104      | ERDS2TJ123    | 12kΩ                    | 1   |
| R105      | ERDS2TJ102    | 1kΩ                     | 1   |
| R106, 107 | ERDS2TJ222    | 2.2kΩ                   | 2   |
| R108      | ERDS2TJ103    | 10kΩ                    | 1   |
| R109, 110 | ERDS2TJ102    | 1kΩ                     | 2   |
| R111      | △ ERD2FCVG101 | 100Ω, 1/4W, Fuse Type   | 1   |
| R112, 113 | ERDS2TJ331    | 330Ω                    | 2   |
| R114      | △ ERD2FCVG101 | 100Ω, 1/4W, Fuse Type   | 1   |
| R115      | △ ERD2FCVJ4R7 | 4.7Ω, 1/4W, Fuse Type   | 1   |
| R120      | △ ERD2FCVJ6R8 | 6.8Ω, 1/4W, Fuse Type   | 1   |

| CAPACITORS |             |          |   |
|------------|-------------|----------|---|
| C5, 6      | ECQB1H153JF | 0.015μF  | 2 |
| C7         | ECQB1H473JF | 0.047μF  | 1 |
| C8         | ECQB1H153JF | 0.015μF  | 1 |
| C10        | ECQG1H332KZ | 0.0033μF | 1 |
| C11        | ECCF1H331J  | 330pF    | 1 |
| C12        | ECQB1H473JF | 0.047μF  | 1 |
| C13        | ECQG1H332KZ | 0.0033μF | 1 |
| C14        | ECQB1H153JF | 0.015μF  | 1 |
| C16        | ECCF1H331J  | 330pF    | 1 |
| C17        | ECQV1H334JM | 0.33μF   | 1 |
| C18        | ECQB1H333JF | 0.033μF  | 1 |
| C19        | ECQV1H154JM | 0.15μF   | 1 |
| C20        | ECQG1H682KZ | 0.0068μF | 1 |
| C21        | ECQV1H154JM | 0.15μF   | 1 |
| C22        | ECQG1H682KZ | 0.0068μF | 1 |
| C23        | ECQV1H334JM | 0.33μF   | 1 |
| C24        | ECQB1H333JF | 0.033μF  | 1 |
| C25, 26    | ECCF1H220J  | 22pF     | 2 |

| Ref. No. | Part No.      | Description | P/S |
|----------|---------------|-------------|-----|
| C28      | △ ECQE1A104M6 | 0.1μF, 125V | 1   |
| C29      | ECEA1VU332    | 3300μF, 35V | 1   |
| C32      | ECEA1VU222    | 2200μF, 35V | 1   |
| C36, 37  | ECRF1H104ZF   | 0.1μF       | 2   |
| C38      | ECEA1CKA100   | 10μF, 16V   | 1   |
| C39      | ECEA1CU331    | 330μF, 16V  | 1   |
| C49      | ECQV1H334JM   | 0.33μF      | 1   |
| C50      | ECQB1H223JF   | 0.022μF     | 1   |
| C51      | ECQV1H104JM   | 0.1μF       | 1   |
| C54      | ECQV1H334JM   | 0.33μF      | 1   |
| C55      | ECQB1H223JF   | 0.022μF     | 1   |
| C56      | ECQV1H104JM   | 0.1μF       | 1   |
| C70      | ECEA50Y3R3    | 3.3μF, 50V  | 1   |
| C71      | ECEA50Y3R3    | 3.3μF, 50V  | 1   |

#### ACP AC POWER SUPPLY CIRCUIT

| Ref. No.   | Part No.       | Description                               | P/S |
|------------|----------------|-------------------------------------------|-----|
| COIL       |                |                                           |     |
| L1         | △ SLTGLF3      | Line Filter                               | 1   |
| JACK       |                |                                           |     |
| JK1        | △ SJVD0203B    | AC Inlet                                  | 1   |
| SWITCH     |                |                                           |     |
| S1         | △ SSRG100A     | Voltage Selector,<br>X XR XS XD XT        | 1   |
| FUSES      |                |                                           |     |
| F1         | △ XBA1C40NU100 | 4A, 125V,<br>M MC XM                      | 1   |
| F1         | △ XBA2C16TB0   | T1.6A, 250V,<br>X XS XR XD XT             | 1   |
| F2         | △ XBA2C10TB0   | T1.0A, 250V,<br>X XS XR XD XT             | 1   |
| F3         | △ XBA2C10TB0   | T1.0A, 250V,<br>except M MC XM            | 1   |
| CAPACITORS |                |                                           |     |
| C1         | △ ECKCVA1472MF | 4700pF, Line Capacitor                    | 1   |
| C2         | △ ECQU2A104MN  | 0.1μF, 250V, Across-the<br>Line Capacitor | 1   |

#### HP HEADPHONES CIRCUIT

| Ref. No.   | Part No.       | Description          | P/S |
|------------|----------------|----------------------|-----|
| COIL       |                |                      |     |
| L1         | QLQGT3T150SA   | Coil                 | 1   |
| JACKS      |                |                      |     |
| JK1, 2     | SJJG100A       | Jack                 | 2   |
| RESISTORS  |                |                      |     |
| R1~4       | △ ERG1ANJP680S | 68Ω, 1W, Flame-Proof | 4   |
| CAPACITORS |                |                      |     |
| C1, 2      | ECKF1E473ZV    | 0.047μF              | 2   |
| C3         | ECRF1H104ZF    | 0.1μF                | 1   |

#### FDCN FD CONNECTOR CIRCUIT

| Ref. No.  | Part No.    | Description | P/S |
|-----------|-------------|-------------|-----|
| WIRE      |             |             |     |
| W1        | QEXG01001RA | Wire        | 1   |
| CAPACITOR |             |             |     |
| C1        | ECRF1H104ZF | 0.1μF       | 1   |

#### PKB PEDAL KEYBOARD CIRCUIT

| Ref. No.  | Part No.    | Description  | P/S |
|-----------|-------------|--------------|-----|
| SWITCHES  |             |              |     |
| S1, 3     | QSTGT001AA  | Lever Switch | 2   |
| RESISTORS |             |              |     |
| R8, 9     | ERDS2TJ472  | 4.7kΩ        | 2   |
| CAPACITOR |             |              |     |
| C1        | ECRF1H104ZF | 0.1μF        | 1   |

#### JACK JACK CIRCUIT

| Ref. No.           | Part No.     | Description            | P/S |
|--------------------|--------------|------------------------|-----|
| INTEGRATED CIRCUIT |              |                        |     |
| IC1                | SVIGTLP513   | Photo Coupler          | 1   |
| TRANSISTORS        |              |                        |     |
| S Q1, 2            | 2SA1015-GR   | 2SA933STRS (SUB. Part) | 2   |
| DIODES             |              |                        |     |
| D4, 6, 7           | MA165        | Diode                  | 3   |
| COILS              |              |                        |     |
| L1~5               | QLQGT3T150SA | Coil                   | 5   |
| JACKS              |              |                        |     |
| JK1                | QJSG007AA    | Jack                   | 1   |
| JK3, 4             | SJSG1370A    | MIDI                   | 2   |
| JK5~8              | QJJG003AA    | Jack                   | 4   |
| WIRES              |              |                        |     |
| W1~3               | QEXG01005RA  | Connector with Wire    | 3   |
| RESISTORS          |              |                        |     |
| R1                 | ERDS2TJ102   | 1kΩ                    | 1   |
| R4                 | ERDS2TJ473   | 47kΩ                   | 1   |
| R5, 7              | ERDS2TJ102   | 1kΩ                    | 2   |
| R13                | ERDS2TJ151   | 150Ω                   | 1   |
| R14                | ERDS2TJ330   | 33Ω                    | 1   |
| R15                | ERDS2TJ104   | 100kΩ                  | 1   |
| R16                | ERDS2TJ221   | 220Ω                   | 1   |
| R17                | ERDS2TJ331   | 330Ω                   | 1   |
| R18                | ERDS2TJ103   | 10kΩ                   | 1   |
| R21, 22            | ERDS2TJ152   | 1.5kΩ                  | 2   |
| R23, 24            | ERDS2TJ102   | 1kΩ                    | 2   |

| Ref. No.   | Part No.    | Description | P/S |
|------------|-------------|-------------|-----|
| CAPACITORS |             |             |     |
| C1, 2, 4   | ECRF1H104ZF | 0.1μF       | 3   |
| C6         | ECCF1H221J  | 220pF       | 1   |
| C7         | ECKF1E473ZV | 0.047μF     | 1   |
| C8         | ECEA1HKA010 | 1μF, 50V    | 1   |
| C11, 12    | ECBA1C222MR | 0.0022μF    | 2   |
| C13        | ECRF1H104ZF | 0.1μF       | 1   |
| C14, 15    | ECBA1C222MR | 0.0022μF    | 2   |
| C16        | ECRF1H104ZF | 0.1μF       | 1   |

#### MKB1 MANUAL KEYBOARD 1 CIRCUIT

| Ref. No.            | Part No.     | Description               | P/S |
|---------------------|--------------|---------------------------|-----|
| INTEGRATED CIRCUITS |              |                           |     |
| IC1                 | MSM7U042016  | Gate Array                | 1   |
| IC2                 | BR93LC46     | 1k bit Programmed EEPROM  | 1   |
| DIODES              |              |                           |     |
| S D1~88             | MA162A       | MA150IR (SUB. Part)       | 88  |
| OSCILLATOR          |              |                           |     |
| X1                  | SVQGA20MX040 | 20MHz, Ceramic Oscillator | 1   |
| RESISTORS           |              |                           |     |
| R1~3                | ERDS2TJ472   | 4.7kΩ                     | 3   |
| CAPACITORS          |              |                           |     |
| C1                  | ECRF1H104ZF  | 0.1μF                     | 1   |
| C2                  | ECCW1H471J5  | 470pF                     | 1   |
| C3, 4               | ECCW1H220J5  | 22pF                      | 2   |
| C5                  | ECKR1E473ZV  | 0.047μF                   | 1   |
| C6, 7               | ECCW1H101J5  | 100pF                     | 2   |

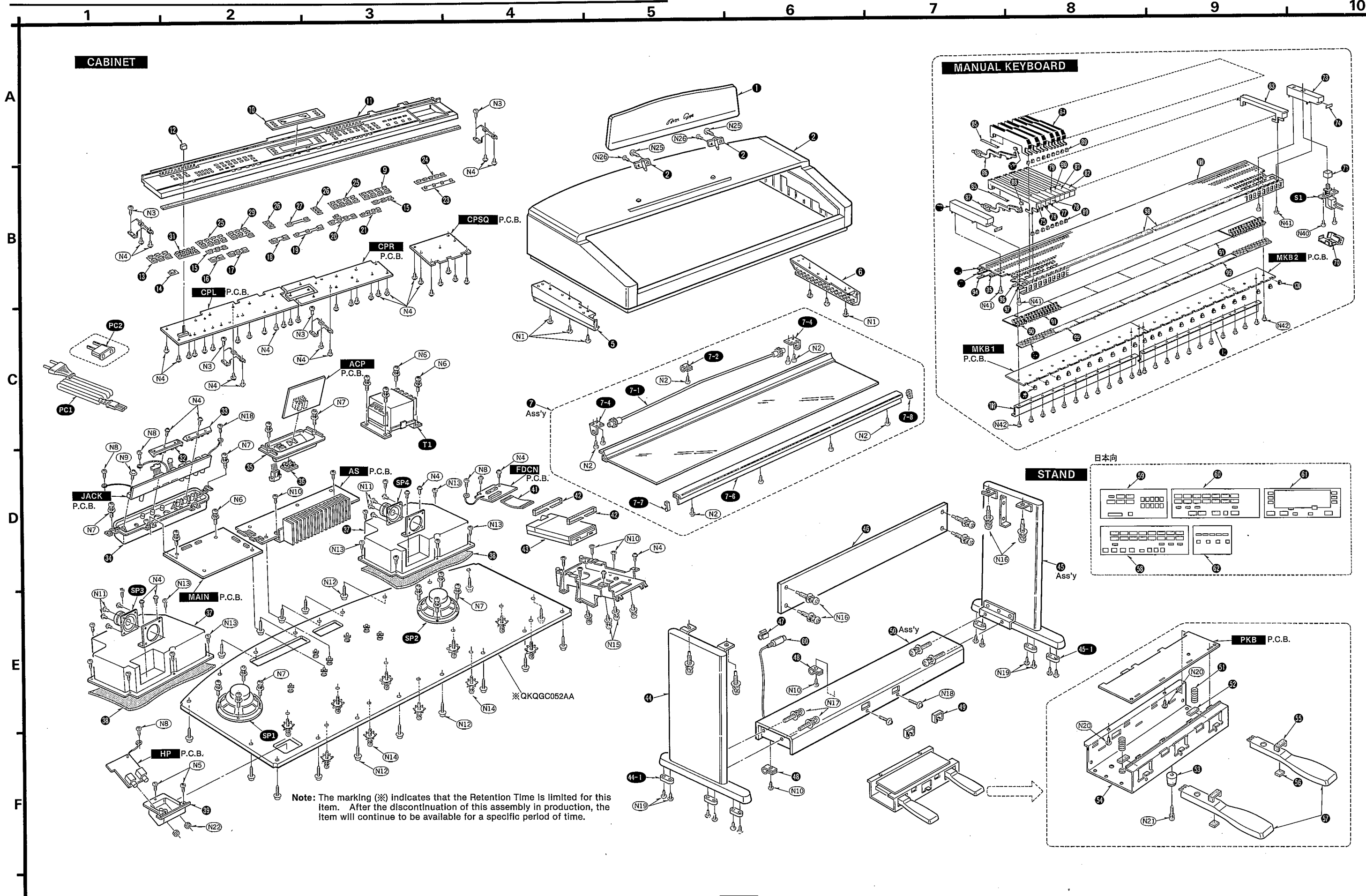
#### MKB2 MANUAL KEYBOARD 2 CIRCUIT

| Ref. No.              | Part No.    | Description         | P/S |
|-----------------------|-------------|---------------------|-----|
| DIODES                |             |                     |     |
| S D89~176             | MA162A      | MA150IR (SUB. Part) | 88  |
| COMPONENT COMBINATION |             |                     |     |
| Z1                    | EXBPI8332JM | 3.3kΩ × 8           | 1   |

#### WIRING PARTS

| Ref. No. | Part No.     | Description         | P/S |
|----------|--------------|---------------------|-----|
| W1       | QEXGZA14045A | Connector with Wire | 1   |
| W3       | QEXGSS08025A | Connector with Wire | 1   |
| W4       | QEXGEH03008A | Connector with Wire | 1   |
| W5       | QEXGSS08015A | Connector with Wire | 1   |
| W6       | QEXGSS11015A | Connector with Wire | 1   |
| W7       | QEXGSS16070A | Connector with Wire | 1   |
| W8       | QEXGSS06100B | Connector with Wire | 1   |
| W10      | QEXGSS16090B | Connector with Wire | 1   |
| W11      | QEXGZA06015A | Connector with Wire | 1   |
| W13      | QEXGEL06020B | Connector with Wire | 1   |
| W14      | QEXGVH03105B | Connector with Wire | 1   |
| W15      | QEXGEL06065B | Connector with Wire | 1   |

CABINET PARTS LOCATION



REPLACEMENT PARTS LIST ..... Cabinet and Chassis Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.  
After the end of this period, the assembly will no longer be available.
2. ○ mark are new parts.  
Cabinet Colour

3. Important safety notice  
Components identified by △ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
4. For part No. with area mark, check the area when placing an order.
5. The raw material indication for synthtic resin  
In order to facilitate classification of parts of synthetic resin manufacture and to promote the recycling of natural resources, a raw material symbol for such parts is indicated in the Ref. No./Material column.

CABINET & CHASSIS PARTS

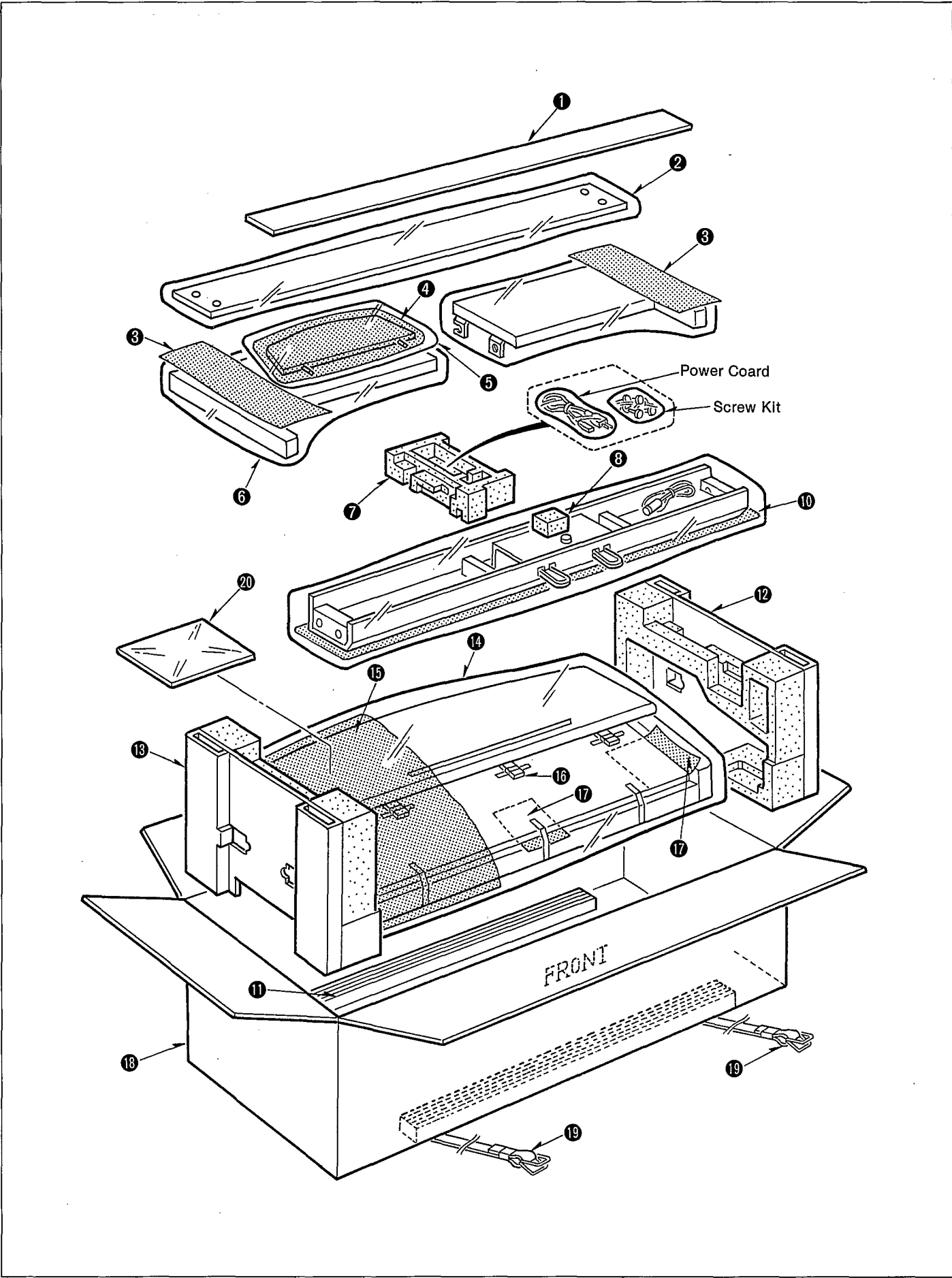
| Ref. No.          | Part No.      | Description                      | P/S |
|-------------------|---------------|----------------------------------|-----|
| SWITCH            |               |                                  |     |
| S1                | △ ESB823V     | Power Switch                     | 1   |
| SPEAKERS          |               |                                  |     |
| SP1, 2            | QASG16PL01A   | 16cm, 8Ω                         | 2   |
| SP3, 4            | EAS65PH31A3   | 6.5cm, 8Ω                        | 2   |
| TRANSFORMER       |               |                                  |     |
| T1                | △ QTPG1M024A  | Power Transformer, Others        | 1   |
| T1                | △ QTPG1M025A  | Power Transformer, X XR XS XD XT | 1   |
| T1                | △ QTPG1M022A  | Power Transformer, M MC XM       | 1   |
| POWER CORD & PLUG |               |                                  |     |
| PC1               | △ SJAG65      | Power Cord, Others               | 1   |
| PC1               | △ QJAG014AA   | Power Cord, XR XL only           | 1   |
| PC1               | △ QJAG013AA   | Power Cord, M MC XM only         | 1   |
| PC1               | △ VJA0733     | Power Cord, EK XD only           | 1   |
| PC2               | △ SJP5213-1   | Attachment Plug, X XT only       | 1   |
| CABINET PARTS     |               |                                  |     |
| ○ 1               | QYAG1028AA    | Music Rack                       | 1   |
| 2                 | SBLG231A      | Stay                             | 2   |
| ○ 3               | PS QYPG1052BB | Cabinet                          | 1   |
| ○ 5               | PS QKSG014AA  | Keyboard Cover Gulde, Right      | 1   |
| ○ 6               | PS QKSG015AA  | Keyboard Cover Gulde, Left       | 1   |
| ○ 7               | QKSGF013AA    | Keyboard Cover Ass'y             | 1   |
| 7-1               | QXQG018AA     | Axletree                         | 1   |
| 7-2               | QWBG002AA     | Holder                           | 1   |
| 7-4               | STPG7021A     | Holder                           | 1   |
| ○ 7-6             | QGKG0116AA    | Ornament                         | 1   |
| 7-7               | QMRG7031BC    | Protector                        | 1   |
| 7-8               | QMRG7032BC    | Protector                        | 1   |
| 9                 | QGUG1260AAK   | Button                           | 1   |
| 10                | QKWG016AA     | Triple 8 Segments Display        | 1   |
| ○ 11              | PS QGPG0067AB | Control Panel                    | 1   |
| 12                | SBNG7050C     | Knob                             | 1   |

| Ref. No. | Part No.      | Description                   | P/S |
|----------|---------------|-------------------------------|-----|
| 13       | QGUG1262AAK   | Button                        | 1   |
| 14       | QGUG1272AAK   | Button                        | 1   |
| 15       | QGUG1263AAK   | Button                        | 2   |
| ○ 16     | QGUG1264BAK   | Button                        | 1   |
| 17       | QGUG1265AAK   | Button                        | 1   |
| 18       | QGUG1266AAK   | Button                        | 1   |
| ○ 19     | QGUG1267BAK   | Button                        | 1   |
| 20       | QGUG1269AAK   | Button                        | 1   |
| ○ 21     | QGUG1268BAK   | Button                        | 1   |
| ○ 23     | QGUG1259AAK   | Button                        | 1   |
| ○ 24     | QGUG1258AAK   | Button                        | 1   |
| 25       | QGUG1260AAK   | Button                        | 2   |
| 26       | QGUG1271AAK   | Button                        | 2   |
| ○ 27     | QGUG1270BAK   | Button                        | 1   |
| 29       | QGUG1261AAK   | Button                        | 1   |
| ○ 31     | QGUG1282AAK   | Button                        | 1   |
| ○ 32     | PS QMRG7029AA | Bracket                       | 1   |
| ○ 33     | PS QMRG7028AA | Bracket                       | 1   |
| ○ 34     | PS QGKG0076CB | External Jack Panel           | 1   |
| 35       | PS QGKG0096CA | AC Jack Panel, Others         | 1   |
| 35       | PS QGKG0096CA | AC Jack Panel, M MC XM        | 1   |
| 35       | PS QGKG0096DA | AC Jack Panel, X XR XS XD XT  | 1   |
| 36       | △ PS SJS9231A | AC Inlet Cover, Others        | 1   |
| 36       | △ PS SJS9334A | AC Inlet Cover, M MC XM XL XR | 1   |
| ○ 37     | PS QMRG7062AA | Speaker Cover                 | 2   |
| 38       | QMF9012AA     | Sound Absorbing Material      | 2   |
| 39       | PS QGKG0080AA | Headphone Jack Case           | 1   |
| 41       | QEUGMQW06D    | Flat Cable                    | 1   |
| 42       | QMF94103AA    | Felt                          | 2   |
| 43       | QAUG006AA     | DDR Drive unit                | 1   |

| Ref. No.        | Part No.       | Description                    | P/S |
|-----------------|----------------|--------------------------------|-----|
| STAND           |                |                                |     |
| ○ 44            | QKQGB302AA     | Left Plank Ass'y               | 1   |
| 44-1            | SHRG2130B      | Foot                           | 3   |
| ○ 45            | QKQGB303AA     | Right Plank Ass'y              | 1   |
| 45-1            | SHRG2130B      | Foot                           | 3   |
| ○ 46            | QKQGD057AAK    | Crossboard                     | 1   |
| 47              | SHRG9620A      | Cord Clamper                   | 1   |
| 48              | SHRG1230A      | Cord Clamper                   | 2   |
| 49              | QKQGM0113AA    | Ornament                       | 2   |
| ○ 50            | QKQGM052AA     | Pedal Box Ass'y                | 1   |
| 51              | QMBG009AA      | Spring                         | 2   |
| 52              | QMF91133AA     | Felt                           | 2   |
| ○ 53            | QKAG0011AA     | Foot                           | 1   |
| ○ 54            | QMWG3010BA     | Pedal Chassis                  | 1   |
| 55              | QMF91134AA     | Felt                           | 2   |
| 56              | QMF91135AA     | Felt                           | 2   |
| 57              | QMWG4002AA     | Pedal Arm                      | 2   |
| MANUAL KEYBOARD |                |                                |     |
| 70              | PP SHRG8390A   | Cover, Power SW.               | 1   |
| 71              | QGUG1040AA     | Button, Power Switch           | 1   |
| 72              | PS QGPG0042AB  | End Cover Panel, Left          | 1   |
| 73              | PS QGPG0041BD  | End Cover Panel, Right         | 1   |
| 74              | QMF91104AA     | Felt                           | 2   |
| 75              | AS QMWG1001AA  | White Key (First Octave A Key) | 1   |
| 76              | AS QMWG1002AA  | White Key (B Key)              | 8   |
| 77              | AS QMWG1003AA  | White Key (C Key)              | 7   |
| 78              | AS QMWG1004AA  | White Key (D Key)              | 7   |
| 79              | AS QMWG1005AA  | White Key (E Key)              | 7   |
| 80              | AS QMWG1006AA  | White Key (F Key)              | 7   |
| 81              | AS QMWG1007AA  | White Key (G Key)              | 7   |
| 82              | AS QMWG1008AA  | White Key (A Key)              | 7   |
| 83              | AS QMWG1009AA  | White Key (Top Octave C Key)   | 7   |
| 84              | QMWG2001AA     | Black Key                      | 36  |
| 85              | SUSG534A       | Spring                         | 88  |
| 86              | QMWG8019CA     | Hammer (Black Key)             | 36  |
| 87              | QMWG8017CA     | Hammer (White Key)             | 52  |
| 88              | SHGG9121A      | Rubber Cap (Hammer)            | 88  |
| 89              | PA QMWG8024AA  | Key Guide                      | 88  |
| 90              | ABS QMWG8022AA | Fulcurum (4 pcs. on one)       | 1   |
| 91              | ABS QMWG8021AA | Fulcurum (12 pcs. on one)      | 7   |
| 92              | SHRGA9080A     | Sponge                         | 2   |
| 93              | QMF91073AA     | Felt                           | 2   |
| 94              | SHSG3461A      | Felt                           | 1   |
| 95              | QMF91101AA     | Felt                           | 2   |
| 96              | QMF91061AA     | Felt                           | 2   |
| 97              | QMF91060AA     | Felt                           | 2   |
| 98              | QMF91086AA     | Felt                           | 2   |
| 99              | QMWG6006AA     | Rubber Switch (8 pcs. on one)  | 11  |
| 100             | SHRG9751A      | P.C.B. Holder                  | 24  |
| 101             | QMWG3003BA     | Chassis                        | 1   |
| 102             | SUWG3157A      | Angle                          | 2   |

| Ref. No.         | Part No.   | Description       | P/S |
|------------------|------------|-------------------|-----|
| SCREWS & WASHERS |            |                   |     |
| N1               | XTB4+14A   | Screw             | 6   |
| ○ N2             | XTB3+5BFZ  | Screw             | 13  |
| N3               | XTB3+8JFZ  | Screw             | 4   |
| N4               | XTW3+10Q   | Screw             | 51  |
| N5               | XTT4+12A   | Screw             | 6   |
| N6               | XYN4+F16   | Screw with Washer | 6   |
| N7               | XYN4+F25   | Screw with Washer | 12  |
| N8               | SNEG2660A  | Screw             | 4   |
| N9               | XTWSG2     | Screw with Washer | 1   |
| N10              | XTB35+12A  | Screw             | 8   |
| N11              | XTW3+8J    | Screw             | 8   |
| ○ N12            | QHDG031AA  | Screw             | 18  |
| N13              | XTT4+14A   | Screw             | 16  |
| N14              | QHDG006AA  | Screw             | 10  |
| N15              | XYN3+F8    | Screw with Washer | 4   |
| ○ N16            | QHDG032AA  | Screw with Washer | 8   |
| N17              | XYN6+F30   | Screw with Washer | 4   |
| N18              | XYN4+F16FZ | Screw with Washer | 2   |
| N19              | XTW3+16JFZ | Screw             | 12  |
| N20              | XTT4+16A   | Screw             | 2   |
| N21              | XYN4+12FFZ | Screw with Washer | 1   |
| N22              | XNS12FZ    | Nut               | 2   |
| N23              | XTB3+6FFZ  | Screw             | 1   |
| N24              | XYN4+F30   | Screw             | 4   |
| N25              | XTT4+10AFZ | Screw             | 2   |
| N26              | XTB3+10AFZ | Screw             | 2   |
| N40              | XTV3+10C   | Screw             | 2   |
| N41              | XTB4+12A   | Screw             | 4   |
| N42              | XTW3+10T   | Screw             | 24  |

PACKING



PACKING PARTS

| Ref. No. | Part No.      | Description      | P/S | Ref. No.                     | Part No.    | Description                                     | P/S |
|----------|---------------|------------------|-----|------------------------------|-------------|-------------------------------------------------|-----|
| 1        | QPNG0358AA    | Top Cardboard    | 1   | OPERATING INSTRUCTION MANUAL |             |                                                 |     |
| 2        | PE QPHG033AA  | Polyethylene Bag | 1   | 20                           | QQFGPR303AA | Operating instruction manual, EN EK XL XR XS XD | 1   |
| 3        | PE SPHG1730A  | Protection Sheet | 2   | 20-1                         | [ QQTG0236A | ENGLISH                                         | 1   |
| 4        | PE SPHG2240A  | Protection Sheet | 1   | 20                           | QQFGPR303CA | Operating instruction manual, M                 | 1   |
| 6        | PE SPHG2050A  | Polyethylene Bag | 2   | 20-1                         | [ QQTG0239A | ENGLISH                                         | 1   |
| 7        | PS QPNG0439AA | Pad              | 1   | 20                           | QQFGPR303DA | Operating instruction manual, MC                | 1   |
| 8        | PS QPNG0472AA | Pad              | 1   | 20-1                         | [ QQTG0236A | ENGLISH                                         | 1   |
| 9        | PE QPFG026AA  | Polyethylene Bag | 1   | 20-2                         | [ QQTG0240A | FRANCAIS                                        | 1   |
| 10       | PE QPHG020AA  | Protection Sheet | 1   | 20                           | QQFGPR303EA | Operating instruction manual, EZ EA             | 1   |
| 11       | PS QPGG0218AA | Pad              | 2   | 20-1                         | [ QQTG0241A | DEUTSCH                                         | 1   |
| 12       | PS QPNG0441AA | Pad              | 1   | 20                           | QQFGPR303FA | Operating instruction manual, EF                | 1   |
| 13       | PS QPNG0440AA | Pad              | 1   | 20-1                         | [ QQTG0240A | FRANCAIS                                        | 1   |
| 14       | PE SPHG2200A  | Polyethylene Bag | 1   | 20-2                         | [ QQTG0242A | ITALIANO                                        | 1   |
| 15       | PE QPHG028AA  | Protection Sheet | 1   | 20                           | QQFGPR303GA | Operating instruction manual, EW                | 1   |
| 16       | SPNG5161A     | Spacer           | 4   | 20-1                         | [ QQTG0240A | FRANCAIS                                        | 1   |
| 17       | PE QPHG018AA  | Protection Sheet | 2   | 20-2                         | [ QQTG0241A | DEUTSCH                                         | 1   |
| 18       | QPGG0274AA    | Carton           | 1   | 20-3                         | [ QQTG0242A | ITALIANO                                        | 1   |
| 19       | SPSG40A       | Band             | 2   | 20                           | QQFGPR303HA | Operating instruction manual, EH                | 1   |
|          |               |                  |     | 20-1                         | [ QQTG0243A | NERDERLANDS                                     | 1   |
|          |               |                  |     | 20-2                         | [ QQTG0240A | FRANCAIS                                        | 1   |
|          |               |                  |     | 20-3                         | [ QQTG0241A | DEUTSCH                                         | 1   |
|          |               |                  |     | 20                           | QQFGPR303JA | Operating instruction manual, EP XM             | 1   |
|          |               |                  |     | 20-1                         | [ QQTG0236A | ENGLISH                                         | 1   |
|          |               |                  |     | 20-2                         | [ QQTG0244A | ESPAÑOL                                         | 1   |
|          |               |                  |     | 20                           | QQFGPR303KA | Operating instruction manual, X                 | 1   |
|          |               |                  |     | 20-1                         | [ QQTG0236A | ENGLISH                                         | 1   |
|          |               |                  |     | 20-2                         | [ QQTG0244A | ESPAÑOL                                         | 1   |
|          |               |                  |     | 20-3                         | [ QQTG0245A | 中文                                              | 1   |
|          |               |                  |     | 20                           | QQFGPR303LA | Operating instruction manual, XT                | 1   |
|          |               |                  |     | 20-1                         | [ QQTG0245A | 中文                                              | 1   |



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